Midi System AS660C/41/34
AS665C/41/30

Service
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Service Manual

TABLE OF CONTENTS

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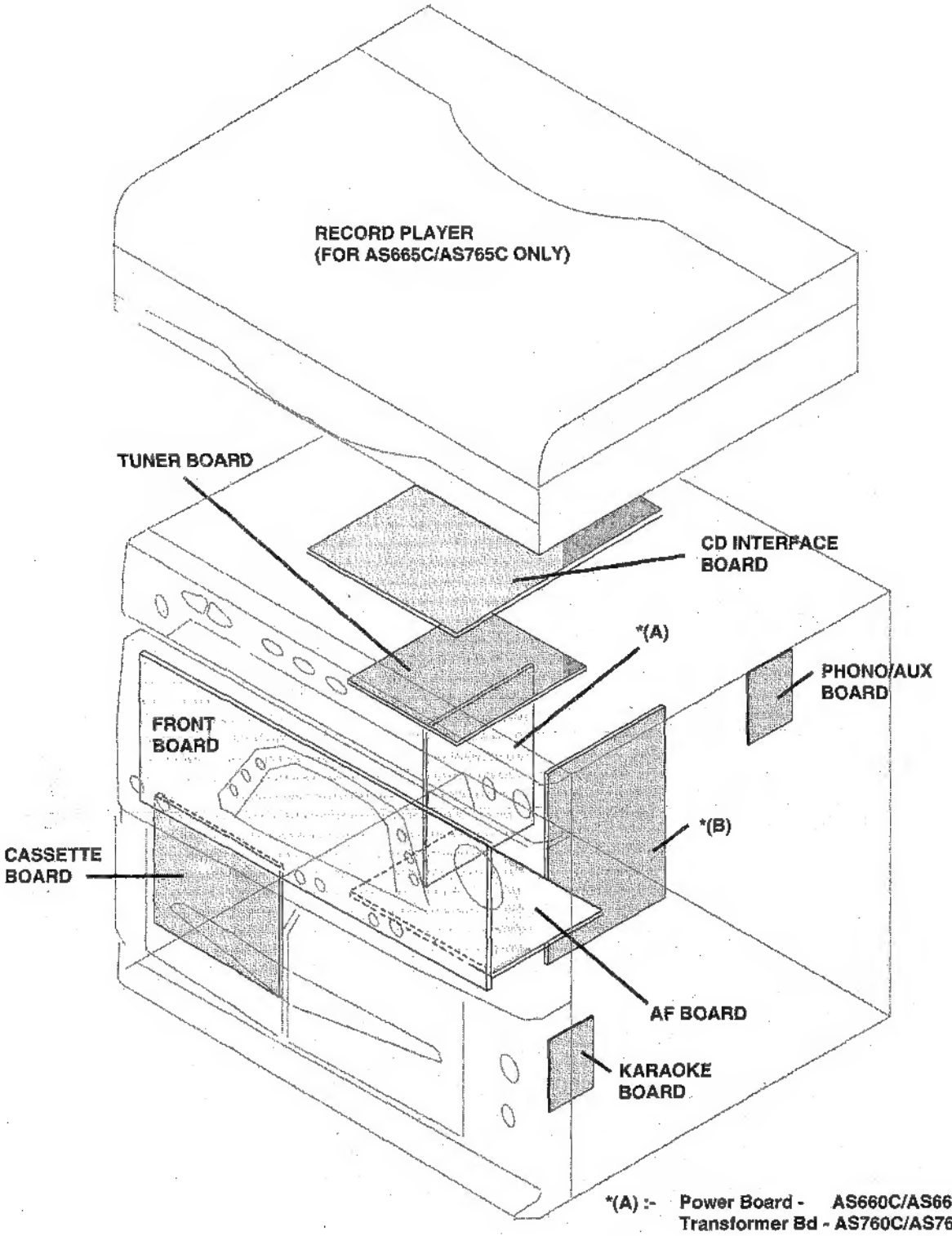
PHILIPS

Location of printed circuit board



*(A) :- Power Board - AS660C/AS665C
Transformer Bd - AS760C/AS765C

*(B) :- Transformer Bd - AS660C/AS665C
Power Board - AS760C/AS765C

TECHNICAL SPECIFICATION

General:

Mains voltage	:	120V ~ 230V 230V (For AS660C/34) 240V (For AS665C/30)
Mains frequency	:	50/60 Hz
Power consumption	:	50 W max. @ 1/8Prated (For AS660C) 55Wmax. @ 1/8Prated(For AS665C) 130 W max. @ 1/10 Prated (For AS760C/AS765C)

Amplifier:

Output power	:	2 x 18W at 3Ω (For AS660C/ AS665C) 2 x 70W at 6Ω (For AS760C/ AS765C)
Headphone	:	3.5mm stereo jack
Frequency response	:	63Hz - 20kHz (-3dB) Limit
Dynamic bass boost	:	+8dB ± 1dB at 100Hz
Input sensitivity		
Aux/Line	:	400mV ± 2dB
Microphone	:	2.5mV ± 2dB @1kHz
Phono	:	5mV ± 2dB

Tuner :

FM

Tuning range	:	87.5MHz - 108MHz
Grid	:	100kHz
IF	:	10.7MHz
Aerial input	:	300R click fit for /37
Sensitivity Mono 26dB S/N	:	<20dB
Distortion at RF=1mV, Δf=75kHz	:	3% (typ. 2%)
IF rejection	:	> 60dB
Image rejection	:	> 25 dB
-3dB Limiting Point	:	< 23.5dBf

MW

Tuning range	:	530kHz - 1700kHz
Grid	:	10kHz
IF	:	450kHz ±1kHz
Sensitivity at 26dB S/N	:	< 4.0mV/M
Distortion at RF=50mV, m=80%)	:	< 5% (typ. 3%)
IF rejection	:	> 45dB
Image rejection	:	> 28dB

CD Unit:

Frequency response	:	20Hz - 20kHz at ±3dB
Signal/Noise ratio	:	>80dB (A-weighted)
Channel unbalance	:	<1dB
Channel separation at 1kHz	:	>50dB
De-emphasis	:	0 or 15/50μS

Recorder Part:

Tape speed	:	4.76 cm/sec ± 2%
Wow and Flutter	:	<0.4%
Fast-wind time C60	:	130sec
Bias system AM/FM	:	AC 73kHz ± 5kHz
Distortion at 250nWb/m	:	<5%
Channel difference at PB	:	<3dB
Channel difference overall	:	<3dB
Channel Separation	:	>24dB at 1kHz
Track Separation	:	>55dB at 1kHz
ALC attack time	:	<300ms
ALC recovery time	:	>10s
Frequency Response	:	80Hz - 12.5kHz within -8dB
Signal to noise ratio ①	:	> 45dB
Siganl to Hiss ratio ②	:	>45dB
Erase attenuation ③	:	>55dB at 1kHz

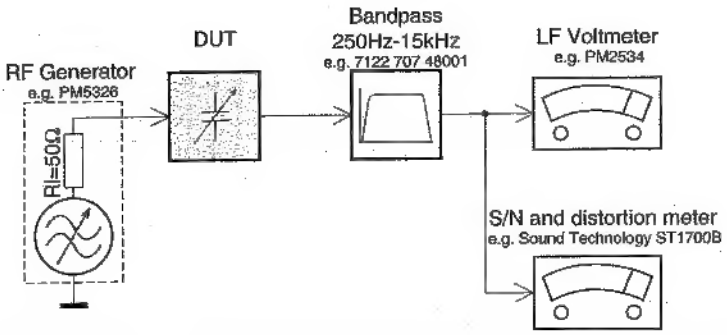
① at 250 nW/m FF-weighted
② at 250 nW/m A-weighted
③ use a 1kHz passfilter to minimize the wide band noise component

Record Player:

Power Supply	:	12dc at 80mA
Wow & Flutter	:	0.25% JIS 0.35% DIN
Operating speed	:	33 1/3 - 45 rpm
Drive system	:	Belt drive with auto return

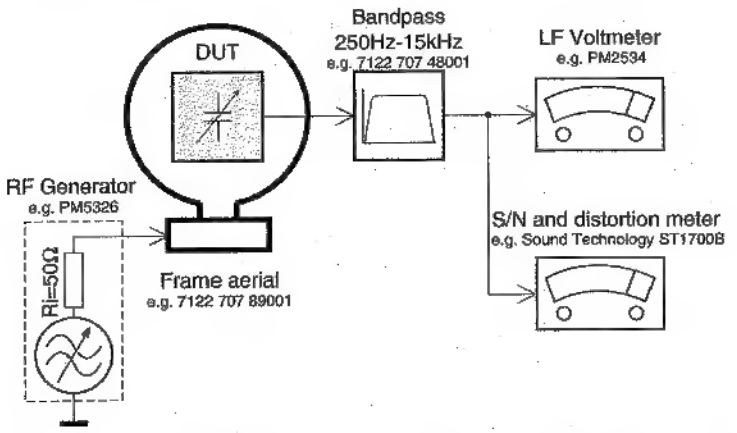
MEASUREMENT SETUP

Tuner FM



Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (19kHz, 38kHz).

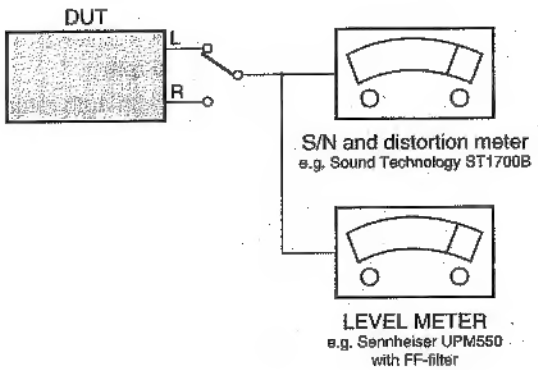
Tuner AM (MW,LW)



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday´s cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

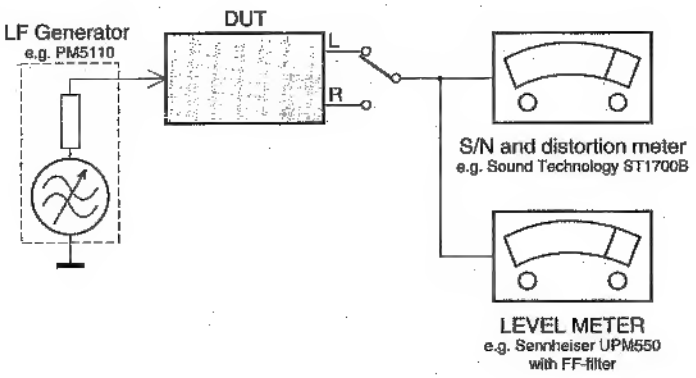
CD

Use Audio Signal Disc SBC429 4822 397 30184
(replaces test disc 3)



RECORDER

Use Universal Test Cassette CrO_2 SBC419 4822 397 30069
or Universal Test Cassette **Fe** SBC420 4822 397 30071



RC5 SYSTEM/COMMAND CODES

Remote control key	System Code	Command Code
Standby	17,18,20,21	12
Standby pressed longer than 1 sec	00,04,05	12
Tuner	17	63
Tuning up	17	30
Tuning down	17	31
Preset up	17	32
Preset down	17	33
Preset 10 key *	17	00-09
CD	20	63
CD Play	20	53
CD Stop	20	54
CD Pause	20	48
Preset 10 key *	20	00-09
CD Next	20	32
CD Previous	20	33
CD Search forward	20	52
CD Search backward	20	50
CD Disc Up	20	30
CD Disc Down	20	31
CD Shuffle	20	28
Tape	18	63
Tape1	18	44
Tape2	18	46
Side	18	47
Tape Play	18	53
Tape Stop	18	54
Tape Wind	18	52
Tape Rewind	18	50
Tape Pause	18	48
Tape Previous	18	33
Tape Next	18	32
Incredible Sound	16	64
DBB	16	70
DSC	16	79
Volume up	16	16
Volume down	16	17
Vocal Fader 1)	16	67
Key control up 1)	16	68
Key control down 1)	16	69
Mulitmedia	04	63
AUX	21	63

1) For set with KARAOKE only

* Only for set with the key available

Only applicable when TV/VCR function is available.

Remote control key	System Code	Command Code
TV/VCR	00	63
Channel down	00	32
Channel up	00	33
Play	00	53
Stop	00	54
Volume Down	00	17
Volume Up	00	16
Pause	05	48

Note: If key not available on the remote control, the code does not apply.

General Information

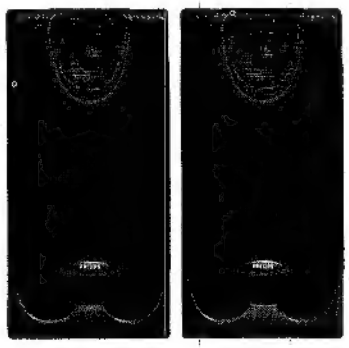
- The typeplate is located at the rear of the set.
- Recording is permissible if copyright or other rights of third parties are not infringed.

1 All unnecessary packaging material has been omitted. We have done our utmost to make the packaging easy to separate into three mono-materials:
   – cardboard (box)
   – expandable polystyrene (buffer)
   – polyethylene (bags, protective foam sheet).
   Please observe the local regulations regarding the disposal of these packaging materials.
2 Your set consists of materials which can be recycled and reused if disassembled by a specialized company. Please follow local regulations on recycling your old set.
3 Do not dispose of dead batteries with your household waste. Dispose of batteries according to local regulations.
4 Note: Switching off the standby mode overnight (remove the AC power cord from the wall socket) will save energy.

Safety Information

- Before operating the system, check that the operating voltage indicated on the typeplate (or the voltage indication beside the voltage selector) of your system is identical with the voltage of your local power supply. If not, please consult your dealer. The type plate is located at the rear of your system.
- When the system is switched on, do not move it around.
- Place the system on a solid base (e.g. a cabinet).
- Place the system in a location with adequate ventilation to prevent internal heat build-up in your system.
- Do not expose the system to excessive moisture, rain, sand or heat sources.
- Under no circumstances should you repair the unit yourself, as this will invalidate the warranty!
- If the system is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lens of the CD unit inside the system. Should this occur, the CD player will not operate normally. Leave the power on for about one hour with no disc in the unit until normal playback is possible.
- Electrostatic discharge may cause unexpected problems. See whether these problems disappear if you unplug the AC power cord and plug it in again after a few seconds.
- **To disconnect the system from the power supply completely, withdraw the AC power cord from the wall socket.**

Speakers



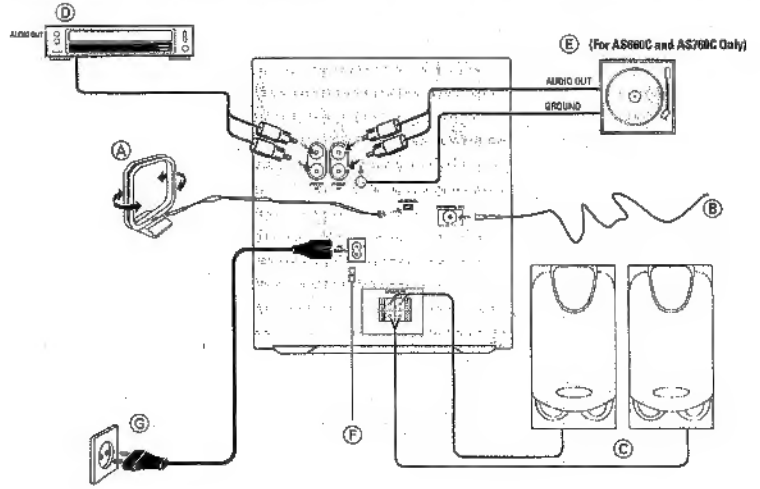
Accessories (Supplied)

– Remote control transmitter
– Batteries for remote control transmitter
– AM loop antenna
– FM antenna wire
– AC power cord

Inserting the batteries into the Remote Control

- Insert the batteries (Type R03, UM-4 or AAA for AS760C/AS765C and Type R6, UM-3 or AA for AS660C/AS665C) into the remote control transmitter as shown in the battery compartment.
- To avoid damage from possible battery leakage, remove the batteries if exhausted or unused for extended period. For replacement use only batteries of the type R03, UM-4 or AAA for AS760C/AS765C and type R6, UM-3 or AA for AS660C/AS665C.

Rear Connection



Ⓐ AM Antenna Connection

Connect the supplied loop antenna to the AM AERIAL terminal. Adjust the position of the AM loop antenna for the best reception.

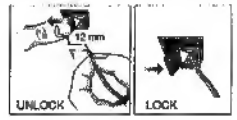
Ⓑ FM Wire Antenna Connection

Connect the supplied FM wire antenna to the FM 75 Ω terminal. Adjust the position of the FM antenna for the best reception.

Outdoor Antenna
For better FM stereo reception connect an outdoor FM antenna to the FM AERIAL 75 Ω terminal using a 75 Ω coaxial wire.

Ⓒ Speaker Connections

- Connect the right speaker to terminal **R**, with the red wire to + and the black wire to —.
- Connect the left speaker to terminal **L**, with the red wire to + and the black wire to —.
- Clip the stripped portion of the speaker wire as shown.



Ⓓ Connecting other equipment to your system

You can connect TV, Laser Disc or VCR audio left and right outputs to the AUX/TV IN terminal at the rear of the system.

Ⓔ Phono In (AS660C and AS760C only)

You can connect a record player with magnetic cartridge. The ground wire should be connected to the screw marked **GND**.

Ⓕ Adjusting the Operating Voltage

(for specific version only)

Before connecting the AC power cord to a wall outlet, make sure that the voltage selector at the rear of the system is set to the local power line voltage. If not, reset the selector before connecting to the wall outlet.

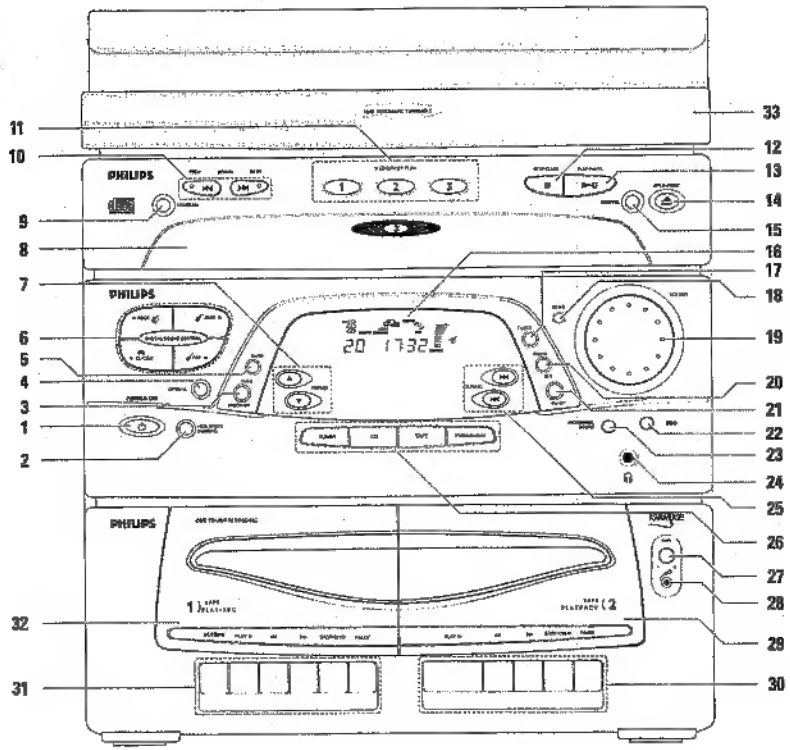
Ⓖ AC Power Supply

After all other connections have been made, connect the AC power socket to the set and the AC power plug to the wall outlet.

Front View

1 **POWER ON**
– to switch the set on or to standby mode.
2 **HIGH SPEED DUBBING**
– to dub from **TAPE DECK 2** to **TAPE DECK 1** at high speed.
3 **AUTO PROGRAM**
– to program preset stations automatically or manually.
4 **OPTIMAL**
– to select the sound setting that is tuned to the acoustics of the supplied speakers.
5 **BAND**
– to select the waveband : FM or MW.
6 **DIGITAL SOUND CONTROL (DSC)**
– to select the desired sound effect : JAZZ, ROCK, POP or CLASSIC.
7 **PRESET ▲ or ▼**
– to select a tuner station in memory. Also use for clock and timer setting.
8 **CD CAROUSEL TRAY**
9 **PROGRAM**
– to program CD tracks.
10 **⏮ PREV / NEXT ⏭ / SEARCH**
– to skip to the beginning of the current or previous/next track or to search backward/forward.
11 **3 CD DIRECT PLAY**
– to select play for each CD tray.
12 **STOP•CLEAR ■**
– to stop CD play or to clear a program.
13 **PLAY•PAUSE ⏯**
– to start or interrupt CD play.
14 **OPEN•CLOSE ⏏**
– to open or close the CD carousel tray.
15 **SHUFFLE**
– to play all the available discs and their tracks in random order.
16 **DISPLAY**
– to display the current setting of the set.
17 **CLOCK**
– to set the clock.
18 **DEMO**
– to display the various features offered by the system.
19 **VOLUME**
– to adjust the volume level.
20 **TIMER SET**
– to set the timer.
21 **TIMER ON•OFF**
– to switch the timer on or off.
22 **DYNAMIC BASS BOOST (DBB)**
– to switch on bass boost to enhance bass response or to switch off bass boost.
23 **INCREDIBLE SOUND**
– to select the pseudo surround spatial sound effect.
24 **PHONES 🎧**
– to connect headphones (ø3.5mm) jack.
25 **TUNING ⏮ or ⏭**
– to tune to tuner stations
⏮ : lower frequencies.
⏭ : higher frequencies.
Also use for clock and timer setting.
26 **SOURCE**
– to select the following :
TUNER : to switch to Tuner mode.
CD : to switch to CD mode.
TAPE : to switch to Tape mode.
PHONO•AUX : to switch to PHONO•AUX mode (for external sources, e.g. TV, Laser Disc, VCR sound or Record Player).
27 **MIC LEVEL**
– To adjust the mixing level for karaoke or microphone recording.
28 **MICROPHONE**
– Connection for microphone.
29 **TAPE DECK 2**
30 **TAPE 2 CASSETTE OPERATION**
– **PLAY ▶** : to start playback.
– **REW ◀◀** : to rewind the cassette.
– **F.FWD ▶▶** : to fast forward the cassette.
– **STOP•OPEN** : to stop playback or to open the cassette compartment.
– **PAUSE** : to interrupt playback.
31 **TAPE 1 CASSETTE OPERATION**
– **RECORD** : to start recording.
– **PLAY ▶** : to start playback.
– **REW ◀◀** : to rewind the cassette.
– **F.FWD ▶▶** : to fast forward the cassette.
– **STOP•OPEN** : to stop playback or to open the cassette compartment.
– **PAUSE** : to interrupt playback or recording.
32 **TAPE DECK 1**
33 **RECORD PLAYER FOR AS665C AND AS765C ONLY**

Front View



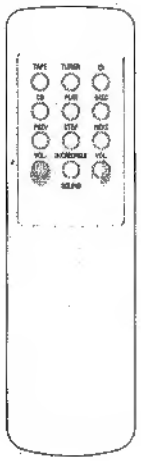
Remote Control Functions

- First select the source you wish to control by pressing one of the source select keys on the remote control (eg. TUNER, CD or TAPE).
- Then select the desired function (PLAY, NEXT, etc.).

Notes:

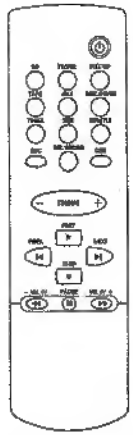
- Whenever a remote control button is pressed, the source icon on the set display will flicker. This indicates the remote control signal is received by the set.
- For TV/VCR operation, the TV or VCR must use the RC-5 code remote control system.
- Press TV/VCR for more than 1 second to switch on the TV/VCR from the standby mode and also to select PHONO•AUX mode.

For Models AS660C and AS665C only

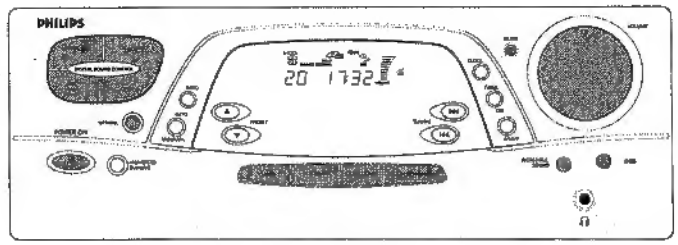


⏻ ..... to switch the unit to standby mode.
TUNER ..... to select TUNER mode.
TAPE ..... to select TAPE mode.
CD ..... to select CD mode.
PLAY ..... to start play in CD mode.
DISC ..... to select and play the desired disc.
PREV/ NEXT
for TUNER ..... to select a lower/higher tuner preset station.
for CD ..... to select previous/next CD track.
STOP ..... to stop play in CD mode.
VOLUME +/− ..... to adjust the volume.
INCREDIBLE SOUND ..... to switch on or off the spatial surround sound effect.

For Models AS760C and AS765C only



⏻ ..... to switch the unit to standby mode.
CD ..... to select CD mode.
TV/VCR ..... to select TV/VCR and PHONO•AUX mode.
DISC UP/DOWN ..... to select desired disc.
TAPE ..... to select TAPE mode.
AUX ..... to select PHONO•AUX mode.
TUNER ..... to select TUNER mode.
SIDE ..... not functional for this model.
SHUFFLE ..... to play CD tracks at random.
DSC ..... to select digital sound control: OPTIMAL, JAZZ, CLASSIC, ROCK or POP.
INCREDIBLE SOUND ..... to switch on or off the spatial surround sound effect.
DBB ..... to switch on or off dynamic bass boost.
VOLUME +/− ..... to adjust the volume.
PLAY ..... to start play in CD mode.
STOP ..... to stop play in CD mode.
⏮ PREV./ NEXT ⏭
for TUNER ..... to select a lower/higher tuner preset station.
for CD ..... to select previous/next CD track.
for TV/VCR ..... to select previous/next channel.
PAUSE ⏸ ..... to interrupt play in CD mode.
◀◀ / ▶▶
for TUNER ..... to tune to a lower/higher frequency.
for CD ..... to search a particular passage.
TV VOLUME +/− ..... to adjust the TV (RC 5 code) volume.



Important :
Before you begin operating the system, complete the preparation procedures. The set is in the standby mode when the AC power plug is connected to the wall socket and "0:00" flashes on the display.

Switching the system ON

- Press **POWER ON** or **TUNER, CD, TAPE** or **PHONO•AUX** (or **CD, TUNER** or **TAPE** on the remote control).

Switching the system to standby mode

- Press **POWER ON** again (or ⏻ on the remote control).

Selecting the Sound Source

- Press one of the source buttons to select either **TUNER, CD, TAPE** or **PHONO•AUX** (or **CD, TUNER** or **TAPE** on the remote control).
  → The display indicates the selected sound source.

You can also select the sound source directly by selecting the respective **PLAY** button for CD mode or the **PRESET, BAND** or **TUNING** button for TUNER mode.

Important! (for models AS660C and AS760C only)
If you select the PHONO•AUX mode and both the PHONO-IN and TV/AUX IN are connected, do not play both the record player or TV/VCR at the same time! If not, both the audio sound will be heard. You are advised to play only one external source at any one time.

Volume Adjustment

Turn **VOLUME** right or left (or press + or − on the remote control) to increase or decrease the sound level.

For Personal Listening
Connect the headphones to the 🎧 socket (ø3.5 mm). The speakers will be muted.

Digital Sound Control (DSC)

- To enjoy a special sound effect, press **JAZZ** ( ), **CLASSIC** ( ), **ROCK** ( ) or **POP** ( ).

Optimal Sound

- Press **OPTIMAL** to hear the sound setting that is tuned to the acoustics of the supplied speakers.

Dynamic Bass Boost (DBB)

- Press **DBB** to enhance the bass response.
  → The dBB flag lights up.
  The button lights up when the DBB feature is switched on.

Incredible Sound

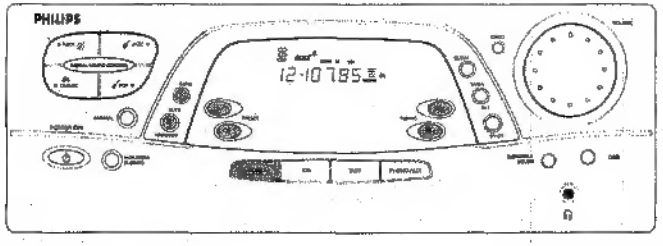
- In addition to all other sound settings, you can activate the spatial surround sound feature by pressing **INCREDIBLE SOUND**.
  → This creates a phenomenal surround sound effect even if the speakers are positioned close to the system. The sound becomes "incredibly" spatial.

  The button lights up when the incredible sound feature is switched on.

Demo mode

The system has a demonstration mode that shows the various features offered by the system.

- Press **DEMO** to switch on the demonstration.
  → The display will show "WELCOME TO THE AUDIO WORLD", then a demonstration of the various features will follow.
- Press **DEMO** again or **POWER ON** to stop the demonstration mode.



Tuning to radio stations

1 Press **TUNER**.
2 Press **BAND** to select the desired waveband : FM or MW.
3 Press **TUNING** ⏮ or ⏭ for more than one second.
→ The display will show "SEARCH" until a station with sufficient signal strength is found.

- Repeat this procedure until the desired station is reached.
- To tune to a weak station, briefly press **TUNING** ⏮ or ⏭ until the display shows the right frequency and/or when the best reception has been obtained.

Storing Preset Stations

You can store up to 20 stations in the memory. When a preset station is selected, the preset number appears next to the frequency on the display.

Automatic programming

1 Press **BAND** to select the desired waveband : FM or MW.
2 Press **AUTO PROGRAM** for more than 1 second to start the automatic programming.
→ PROGRAM flashes and "AUTO" is displayed.
→ Every available station will be stored automatically. The frequency and preset number will be displayed briefly.
→ It will stop searching when all the available stations are stored or the memory for 20 preset stations is used.

- You can cancel the automatic programming by pressing **AUTO PROGRAM**, **TUNING** ⏮ or ⏭ , **PRESET** ▼ or ▲ or **BAND**.

Note:
If you want to maintain some old preset numbers, for example preset number 1 - 9, select preset 10 before starting automatic programming: now only the preset numbers 10 to 20 will be programmed.

Manual programming

1 Press **AUTO PROGRAM** for less than 1 second.
→ PROGRAM flashes on the display.
2 Press **BAND** to select the desired waveband : FM or MW.
3 Press **TUNING** ⏮ or ⏭ to tune to the desired frequency.
4 Press **PRESET** ▼ or ▲ to select a preset number.
5 Press **AUTO PROGRAM** again.
→ PROGRAM disappears, and the station is stored.

- Repeat the above procedure to store other preset stations.

Tuning to Preset Stations

- Press **PRESET** ▼ or ▲ (or **PREV** or **NEXT** on the remote control) to select the desired preset number.
→ The preset number, frequency and waveband appear on the display.

Changing the FM/MW tuning grid

(for specific version only)

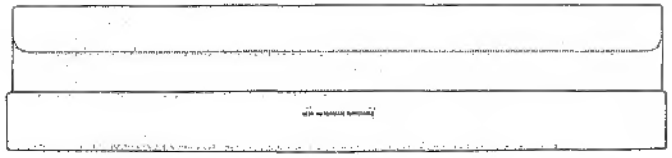
The frequency step can be changed if necessary. In North and South America, the frequency step between adjacent channels in the FM/MW band is 100 kHz/10 kHz. In other parts of the world, it is 50 kHz/9 kHz. Usually the frequency step has been preset in the factory for your area.

For FM Band : change from 50kHz to 100kHz or vice versa
For MW Band : change from 9kHz to 10kHz or vice versa

Changing of tuning grid will erase all previously stored preset stations.

1 Switch the unit to standby mode and disconnect the unit from the AC power supply (pull out the AC power cord).
2 Keep **AUTO PROGRAM** and **TUNING** ⏭ depressed, while re-connecting the system to the AC power supply again.
→ Display briefly shows "TUNER" and then followed "GRID 9" or "GRID 10".

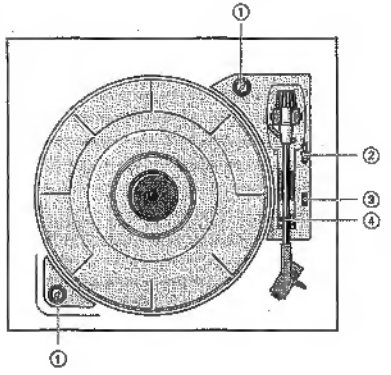
Note:
GRID 9 indicates that the tuning grid is in step of 50kHz in FM band and 9kHz in MW band. GRID 10 indicates that the tuning grid is in step of 100kHz in FM band and 10kHz in MW band.



Record Player Controls

① Transport safety screws.
② Pick up arm lever for raising and lowering the pick up arm.
③ RPM selector for selecting the appropriate speed of 33 or 45 rpm.
④ Pick up arm lever clamp.

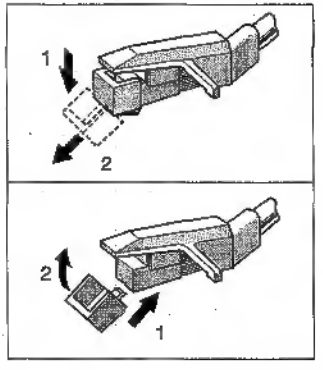
Note:
Preparation for use
Fully tighten both record player transport safety screws. Screw in clockwise direction.

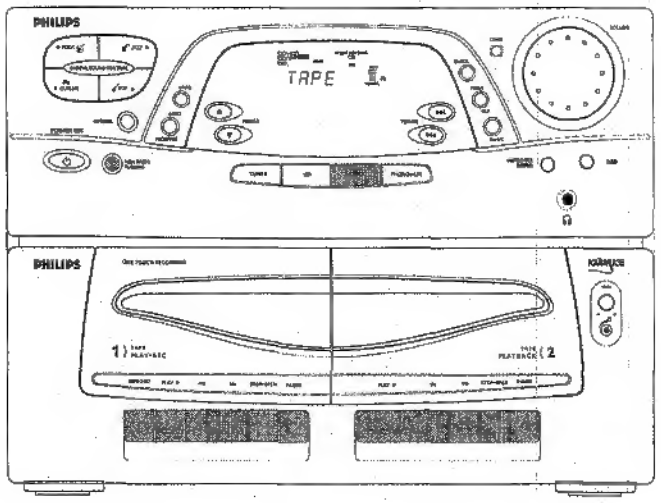


Record Player Operation

1 Press **PHONO•AUX**.
2 Place a record on the turntable.
3 Remove the stylus guard by gently pulling it forward.
4 Set the appropriate speed - 33 or 45 - on the rpm selector.
5 Release the pickup arm from its clamp.
6 Set the lever to ⧗ (UP).
7 Move the pickup arm inwards. This starts the record player. Then position the arm above the desired track or passage on the record.
8 Move the lever carefully to the ⧗ (DOWN) position. Playback of the record begins.
9 At the end of the record the pickup arm returns to its support and the record player is automatically switched off.
10 Record playback can be stopped at any given time by setting the lever to the ⧗ (UP) position and then moving the pickup arm outwards.
When the pickup arm reaches the support, the turntable will stop. The lever can now be set to the ⧗ (DOWN) position, the arm secured and the stylus guard replaced.

Notes:
1. At first it is possible that the pickup arm will not return to its support. If this happens, move the pickup arm by hand - gently! - to the centre of the record. Once the mechanism has been actuated in this way, it will subsequently operate automatically.
2. To change needle gently pull it down and take it out (see figure). Replace the needle with same model by pushing to the original place. The "click" indicates that the new needle is fixed.





Loading a cassette

- Press **STOP•OPEN**.
- The cassette compartment door opens.
- Load the cassette with the open side downward and the full spool to the left.
- Close the cassette compartment door.

Tape Playback

1 Press **TAPE**.
2 Load the cassette into a **CASSETTE DECK**.
3 Press **PLAY ▶** to start playback.
4 Press **STOP•OPEN** to end playback.

Fast Forward/Rewinding

1 You can rewind or fast forward the tape by pressing **◀◀** or **▶▶**.
2 Press **STOP•OPEN** to stop fast forwarding or rewinding.

Note:
It is possible to fast forward or rewind a cassette when the set is in another source mode (e.g. TUNER, CD or PHONO•AUX mode).

Continuous playback of two cassettes

1 Press **TAPE**.
2 Load the cassettes in **TAPE DECK 1** and **TAPE DECK 2**.
3 Press **PLAY ▶** on **TAPE DECK 2**.
4 Press **PAUSE** on **TAPE DECK 1**.
5 Press **PLAY ▶** on **TAPE DECK 1**.
→ Playback will begin with **TAPE DECK 2** and will continue with **TAPE DECK 1** when **TAPE DECK 2** ends.
6 Press **STOP•OPEN** if you want to stop playback before the end of the tape in **TAPE DECK 1** or **TAPE DECK 2**.

Recording (TAPE DECK 1)

1 Press **TUNER, CD** or **PHONO•AUX**.
2 Load a blank cassette into **TAPE DECK 1**.
3 Press **RECORD** on **TAPE DECK 1** to start recording.
→ The RECORD flag starts flashing.
4 Press **STOP•OPEN** on **TAPE DECK 1** to stop recording.

Note:
During recording, it is not possible to listen to another sound source

Dubbing cassettes (from DECK 2 to DECK 1)

1 Load the pre-recorded cassette into **TAPE DECK 2** and a blank cassette into **TAPE DECK 1**.
→ Make sure that both cassettes have their full spools to the left.
- For high speed recording, press **HIGH SPEED DUBBING**.
→ HIGH SPEED appears on the display.

2 Press **PAUSE** on **TAPE DECK 1**.
3 Press **RECORD** on **TAPE DECK 1**.
→ RECORD appears on the display.
4 Press **PLAY ▶** on **TAPE DECK 2**.
→ Recording will start automatically.
5 Press **STOP•OPEN** on **TAPE DECK 1** and **TAPE DECK 2** to stop dubbing.

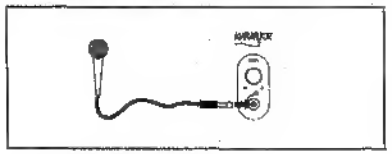
Notes:
– At the end of side A, flip the cassettes to side B and repeat the procedure.
– Dubbing of cassettes is only possible in the TAPE mode. To ensure good dubbing, use tapes of the same length.
– During high speed dubbing in Tape mode, the sound is reduced to a low volume.

General Information

– For recording, use only a cassette of IEC type I (normal cassette).
– The tape in the cassette is secured at both ends with leader tape. At the beginning and end of a cassette, nothing will be recorded for six to seven seconds.
– The recording level is set automatically, regardless of the position of VOLUME.
– Check and tighten slack tape with a pencil before use. Slack tape may get jammed or may burst in the mechanism.
– To prevent accidental recording, break out the tab on the left shoulder of the cassette side. To re-record the cassette, cover each hole with cellophane tape.

– C-120 tape is extremely thin and may be easily deformed or damaged. It is not recommended for use in this unit.
– Store the cassettes at room temperature and do not put them too close to a magnetic field (for example, transformers, TVs or speakers).

Karaoke



Microphone mixing

1 Connect the microphone to the mic socket.
2 Press **CD, TUNER, TAPE** or **PHONO•AUX**.
3 Play the selected source.
4 Adjust the volume with **VOLUME** control.
5 Adjust the **MIC LEVEL** control to the mixing level that you want.
6 Start singing or talking through the microphone.

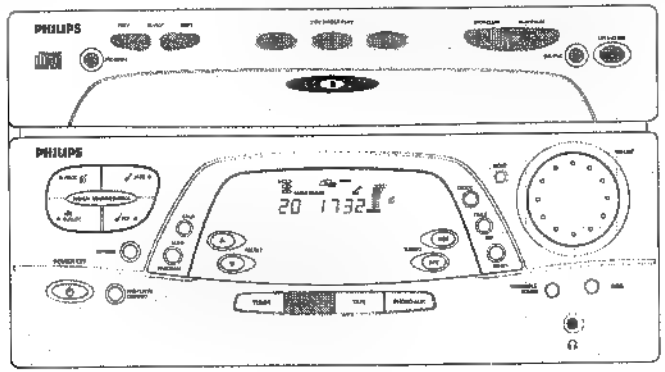
Note:
– To prevent acoustics feedback (for example, a loud howling sound), adjust the MIC LEVEL control to the minimum before you plug in the microphone.

Recording the mixed sound

During microphone mixing, you can record the mixed sound on a cassette in DECK 1.

1 Load a blank cassette in **DECK 1**.
2 Press **RECORD**.

Notes:
– If you do not intend to record via the microphone, unplug the microphone to avoid accidental mixing with other recording source.
– It is not possible to record the mixed sound through a microphone during cassette Dubbing mode.

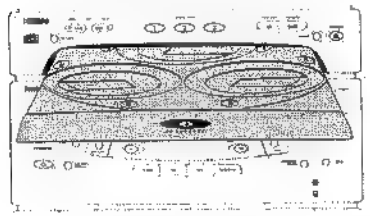


Warning!

1) This set is designed for conventional CDs. Do not use any accessories like disc stabilizer rings or CD treatment sheets, etc. which may damage the CD mechanism.
2) Do not load more than one disc into each tray.
3) When the CD changer is loaded with CD(s), do not turn over or shake the unit as this may jam the changer mechanism.

You can load up to three discs in the CD changer for continuous play without interruption. You can see the display of the selected or current disc ■ the display panel.
In addition to the conventional 12-cm disc, 8-cm discs can also be used without ■ adaptor.

Loading the CD Changer



1 Press **CD**.
2 Press **OPEN•CLOSE ⏏**.
→ The CD compartment slides out.
3 Load a disc with the ***printed side up*** in the right tray.
• You can load another disc in the left tray.
• To load the third disc, press the corresponding **3 CD DIRECT PLAY** button of the empty tray.
→ The CD changer carousel will rotate until the empty tray is at the right hand side and is ready for loading.
→ Playback will always start with the outer right disc tray.
4 Press **OPEN•CLOSE ⏏** to close the CD compartment.
→ The total number of tracks and playing time of the last selected disc appear on the display.

The following display indications will help you to know whether the disc trays are empty or loaded.

1 – indicates the disc tray is empty.

2 – indicates the disc tray ■ loaded with a disc.

▶2 – indicates the current or selected disc tray.

Playing a Disc

1 Press **PLAY•PAUSE ▶–II** (or **PLAY** on the remote control) ■ start playback.
→ The disc tray, track number and elapsed playing time of the current track appear on the display.
• To interrupt play, press **PLAY•PAUSE ▶–II**.
→ The playing time flashes.
• To resume play, press **PLAY•PAUSE ▶–II** again (or **PLAY** on the remote control).
2 To stop play, press **STOP•CLEAR ■** (or **STOP** on the remote control).

Note:
If no action is performed during playback, all the available discs will play once and then stop. When the CD has stopped playing, the set will switch to the standby mode after 15 minutes ■ no button is pressed.

When the CD tray is closed, you can also play a CD directly by pressing the **3 CD DIRECT PLAY (1 – 3)** buttons. The CD player will stop at the end of playback of the selected disc.

Selecting a desired track

Selecting a desired track at the stop mode
1 Press **⏮ PREV** or **NEXT ⏭** (**PREV** or **NEXT** on the remote control) until the desired track appears on the display.
2 Press **PLAY•PAUSE ▶–II** (or **PLAY** on the remote control) to start playback.
→ The selected track number and elapsed playing time appear on the display.

Selecting a desired track during play mode
1 Press **⏮ PREV** or **NEXT ⏭** (**PREV** or **NEXT** on the remote control) until the desired track appears on the display.
→ The selected track number and elapsed playing time appear on the display.
• If you press **⏮ PREV** once it will skip to the beginning of the current track and play the track again.

Searching for a particular passage during play

• Press and hold **SEARCH ⏮** or **⏭** until the desired passage is located. During the search, the sound is played faster than normal at a reduced volume. Play returns ■ normal when **SEARCH ⏮ ■ ⏭** is released.

Shuffle

(also on models AS760C and AS765C remote control only)

SHUFFLE – playing all the available discs and their tracks in random order. It can also be used during program mode.

To shuffle all the discs and tracks
1 Press **SHUFFLE**.
→ "SHUFFLE" flashes briefly on the display.
→ The SHUFFLE flag, the disc and the track selected at random appear on the display.
• The discs and the tracks will now be played in random order until you press **STOP•CLEAR ■**.
2 Press **SHUFFLE** again to resume normal play.
→ The SHUFFLE flag disappears from the display.

Programming Tracks

Programming tracks of a loaded CD is possible ■ the stop mode of the CD. Reviewing of a program is only possible in stop mode. The display will indicate the total tracks stored in the program. Up to 40 tracks can be stored in the memory in any order. When 40 tracks are stored and you attempt to store another track, the display will show "PROGRAM FULL".

1 Load the desired discs in the disc trays.
2 Press **PROGRAM** ■ start programming.
→ The PROGRAM flag flashes on the display.
3 Press the desired disc button to select the disc.
4 Press **⏮ PREV** or **NEXT ⏭** to select the desired track.
5 Press **PROGRAM** to store the track.
• Repeat steps **3** to **5** to store other discs and tracks.
6 Press **STOP•CLEAR ■** once to end programming mode.
→ The total number of tracks programmed and total playing time appear on the display.

Playing the program
1 Press **PLAY•PAUSE ▶–II** (or **PLAY** on the remote control) to start program playback.
→ The track number and elapsed playing time of the current track appear on the display.
2 Press **STOP•CLEAR ■** (or **STOP** on the remote control) to stop program playback.

Note:
If you press any of the 3 CD DIRECT PLAY buttons, the set will play the selected disc, the stored program will be ignored temporary. The PROGRAM flag will also temporarily disappear from the display and then reappear when the playback for the selected disc ends.

Reviewing the program
Reviewing the program is only possible in the stop mode.
• Press **⏮ PREV** or **NEXT ⏭** repeatedly to review the programmed tracks.

Erasing the program (in the stop position)
• Press **STOP•CLEAR ■**.
→ "PROGRAM CLEARED" appears on the display.

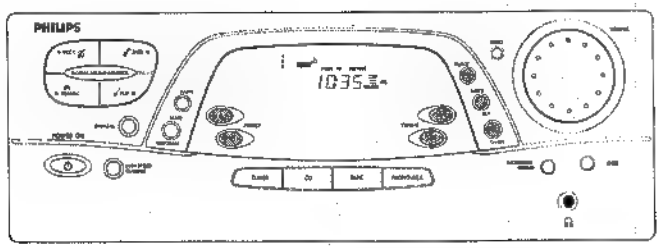
Note:
The program is also erased when the set is disconnected from the power supply. If the CD carousel is opened, only the outer two trays will ■ erased and the display will show "CLEARED".

CD Recording

During CD recording
• It is not advisable to fast forward/rewind your cassette in TAPE DECK 2.
• It is not possible to listen to another sound source.

CD Recording
1 Load a blank cassette (full spool to the left) into **DECK 1**.
2 Press **CD**.
3 Load a disc into the disc tray.
4 Press **⏮ PREV** or **NEXT ⏭** to select the desired track. If desired, you can program the tracks in the order you want them to be recorded (see Programming Tracks).
5 Press **RECORD** on **TAPE DECK 1** ■ start recording.
→ The RECORD flag flashes on the display.
→ CD starts playing.
6 Press **STOP•CLEAR ■** on CD and **STOP•OPEN** on **TAPE DECK 1** ■ stop recording.

Clock Setting



Setting the Clock

The clock will display in 24-hour mode, e.g. 00:00 or 23:59.

1 Press **CLOCK**.
→ "00:00" starts flashing.
2 Set the hour with **PRESET** ▼ or ▲.
3 Set the minute with **TUNING** ⏮ or ⏭ .
4 Press **CLOCK** again to store the setting.
→ The clock starts running.

Note:

– When a power interruption occurs, the clock settings are erased, and "0:00" will flash on the display.

Setting the Timer

- The system can switch on to TUNER or CD mode automatically at a preset time. It can serve as an alarm to wake you up. After half an hour from the preset time, the system will return to the standby mode.
- Before setting the timer, make sure the clock is set correctly.
- The timer works only once each setting.
- **The volume of the timer will be at the last setting before the set is switched to Standby mode.**

Timer Setting

Timer Setting

1 Press **TIMER SET**.
→ The TIMER flag flashes.
2 Press **PRESET** ▲ to select the desired source.
→ The display will switch as follows:
TUNER → CD → TUNER ...
3 Press **TIMER SET** to confirm your source selection.
→ The display will show "ON 00:00" and "00:00" flashes.
4 Press **PRESET** ▼ or ▲ to set the hour for the timer to start.
5 Press **TUNING** ⏮ or ⏭ to set the minutes for the timer to start.
6 Press **TIMER SET** to store the start time.
→ The TIMER is now set.
→ The TIMER flag remains lit.

To stop the TIMER

- Press **TIMER ON•OFF** on the set.
→ The TIMER is now off.

To start the TIMER again

- Press **TIMER ON•OFF** on the set.
→ The display will show the last set start time of the TIMER and its flag.
→ The TIMER flag remains lit.

Notes:

1. If the source selected is TUNER, the last tuned frequency will be switched on.
2. If the source selected is CD, the first track of the last selected disc will be played. If the CD trays are empty, the TUNER source will be selected instead.

Maintenance

Maintenance

Cleaning the Cabinet

- Use a soft cloth slightly moistened with a mild detergent solution. Do not use a solution containing alcohol, spirits, ammonia or abrasives.

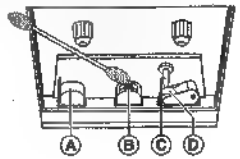
Cleaning Discs

- When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the center out.

- Do not use solvents such as benzine, thinner, commercially available cleaners, or anti-static spray intended for analog records.

Cleaning the Heads and the Tape Paths

- To ensure good recording and playback quality, clean the heads Ⓐ and Ⓑ, the capstan Ⓒ, and pressure roller Ⓓ after every 50 hours of tape operation.



- Use a cotton swab slightly moistened with cleaning fluid or alcohol.

Demagnetizing the heads

- Use a demagnetizing cassette available at your dealer.

Troubleshooting Guide

Warning: Under no circumstances should you try to repair the set yourself, as this will invalidate the warranty.

- If a fault occurs, check the points listed below before taking the set for repair.
- Should any problems persist after you have made these checks, consult your nearest dealer or service center.

Symptom	Cause	Remedy
Radio Reception		
The STEREO indicator flashes.	The signal is too weak.	Adjust the antenna.
Severe hum or noise.	The signal strength is too weak. The TV or VCR is too close to the stereo system.	Adjust the antenna. Separate the stereo system from the TV or VCR. Connect an external antenna for better reception.
Cassette Deck Operation		
Recording is not possible.	No cassette in the cassette deck. The protection tab has been broken.	Insert a blank cassette into the cassette deck Put a piece of clear adhesive tape over the opening.
Recording or playback cannot be made or there is a decrease in audio level.	Dirty tape heads. Magnetic build-up in the record/playback head.	See section on cassette deck maintenance. Use demagnetizing cassette.
Excessive wow or flutter, or sound drop-out.	Contamination of the capstans or pressure rollers.	See section on cassette deck maintenance.
CD Player Operation		
"NO DISC" is displayed.	The disc is inserted upside down. Moisture condensation. There is no disc in the selected CD tray. The CD is dirty, badly scratched or warped.	Place CD with printed side up. Wait until lens has adjusted to normal room temperature. Insert a CD. Replace or clean the CD.
Record Player (AS665 and AS765 only)		
No sound.	PHONO source is not selected.	Press the PHONO•AUX key
Bad sound.	Needle is dirty.	Clean or change the needle.
Pickup arm jumps out of the groove.	The record player is not positioned on a level surface.	Position the record player on a level surface.
General		
Set not working.	Set does not react when buttons are pressed.	Press POWER ON to switch the unit off, then switch it on again. Or, unplug the AC power plug from the wall outlet, then plug it in again.
No or poor sound.	Volume is not turned up. The headphones are connected. Speakers are not connected or are connected wrongly.	Turn VOLUME clockwise. Disconnect the headphones. Check that the speakers are connected correctly. Make sure that the stripped speaker wire is clamped.
Reversed left and right sound.	Speakers are connected wrongly.	Check the speaker connections and speaker location.
Lack of bass sound or apparently imprecise physical location of musical instruments.	Speakers are connected wrongly.	Check the speaker connection for proper phasing, red/black wires to red/black terminals.
Clock blinking.	There was a power out.	Reset the clock.
Remote control has no effect on the set.	The distance to the system is too large. Batteries are inserted incorrectly. Batteries are dead. Wrong sound source is selected.	Reduce the distance. Insert the batteries correctly. Replace the batteries. Select the sound source before pressing the function button. (PLAY, NEXT, PREV, etc.)
Timer not working	Timer not on. Dubbing/recording is active.	Press TIMER ON•OFF on the set to switch on the timer.
"PRESS DEMO TO EXIT" is displayed.	Demo mode is switched on.	Press POWER ON or DEMO to switch off demo mode.

Warnings & Safety

ESD

(GB) WARNING
All ICs and many other semiconductors are susceptible ■ electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools at this potential.

(F) ATTENTION
Tous les IC et beaucoup d´autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévite pourrait être considérablement écourtée par le fait qu´aucune précaution nést prise à leur manipulation.
Lors de réparations, s´assurer de bien être relié au même potentiel que la masse de l´appareil ■ enfileer le bracelet serti d´une résistance de sécurité.
Veiller à ce que les composants ainsi que tes outils qua l´on utilise soient également à ce potentiel.

(D) WARNUNG
Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.
Sorgen Sie dafür, daß sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.
Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

(NL) WAARSCHUWING
Alle IC´s en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen vermindern. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met helzelfde potentiaal als de massa van het apparaal.
Houd componenten en hulpmiddelen ook op dltzelfde potentiaal.

(I) AVVERTIMENTO
Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparationi occorre quindi essere collegato allo stesso potenziale che quello della massa delápparecchio tramite un braccialello a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

SAFETY

(GB)
Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.
Safety components are marked by the symbol ⚠

(D)
Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Originalersatzteile zu verwenden.
Sicherheitsbauteile sind durch das Symbol ⚠ markiert.

(S) Varning !
Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

(F)
"Pour votre sécurite, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

(I)
Le norme di sicurezza estigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambiago identici a quelli specificati.
Componenty di sicurezza sono marcati con ⚠

(F)
Las normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.
Les composants de sécurité sont marqués ⚠

(DK) Advarsel !
Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

(NL)
Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.
De Veiligheidsonderdelen zijn aangeduid met het symbool ⚠

(FIN) Varoitus !
Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle lasersäteilyle. Älä katso säteeseen !

SERVICE HINTS

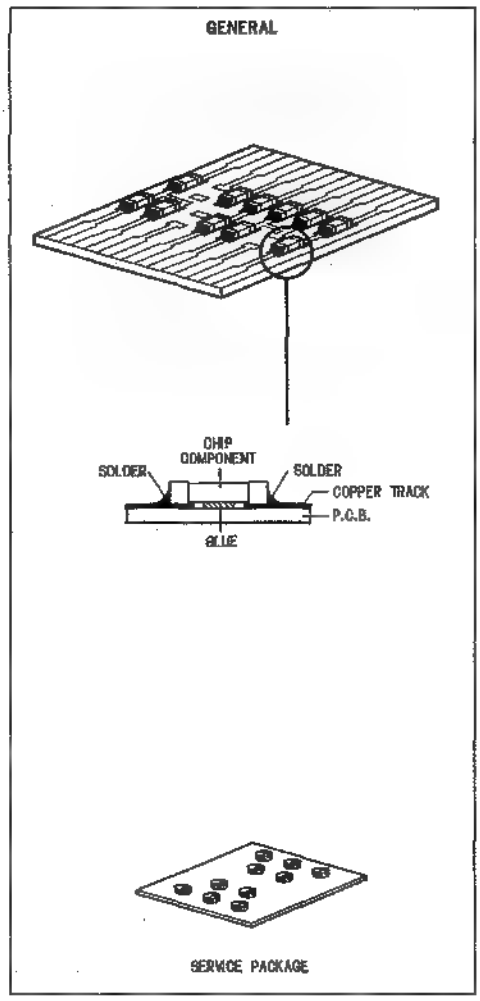
Service Tools

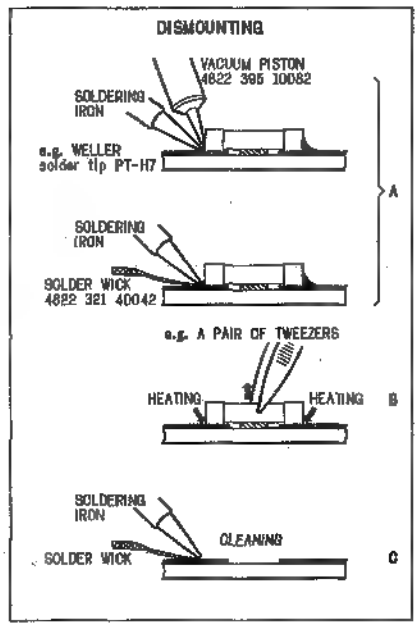
TORX screwdriver set SBC 163 ..... 4822 295 50145

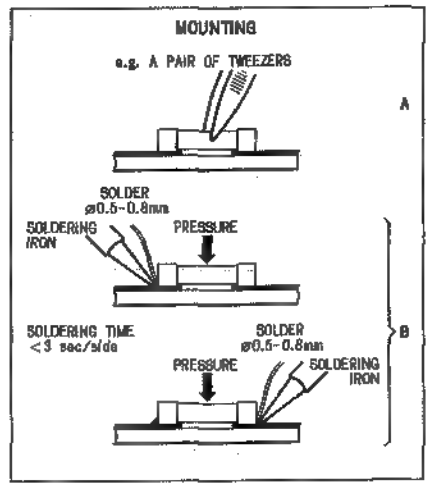
Audio signal disc SBC 429 ..... 4822 397 30184
Test disc 5 (disc without errors) +
Test disc 5A (disc with dropout errors, black spots and fingerprints)
SBC 426/426A 4822 397 30096
Burn in test disc (65 min. 1kHz signal at -30dB level without "pause") 4822 397 30155

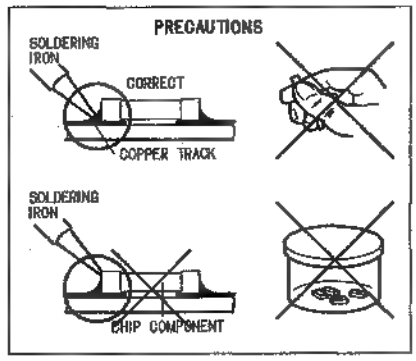
Universal test cassette Fe SBC 420 ..... 4822 397 30071
Universal test cassette CrO2 SBC 419 ..... 4822 397 30069

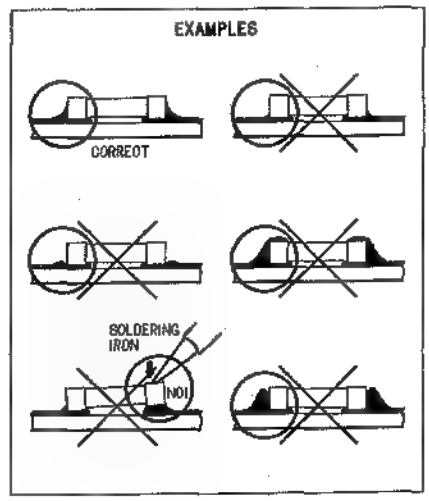
Handling Chip Components











DISMANTLING INSTRUCTIONS

Dismantling of Cassette flap

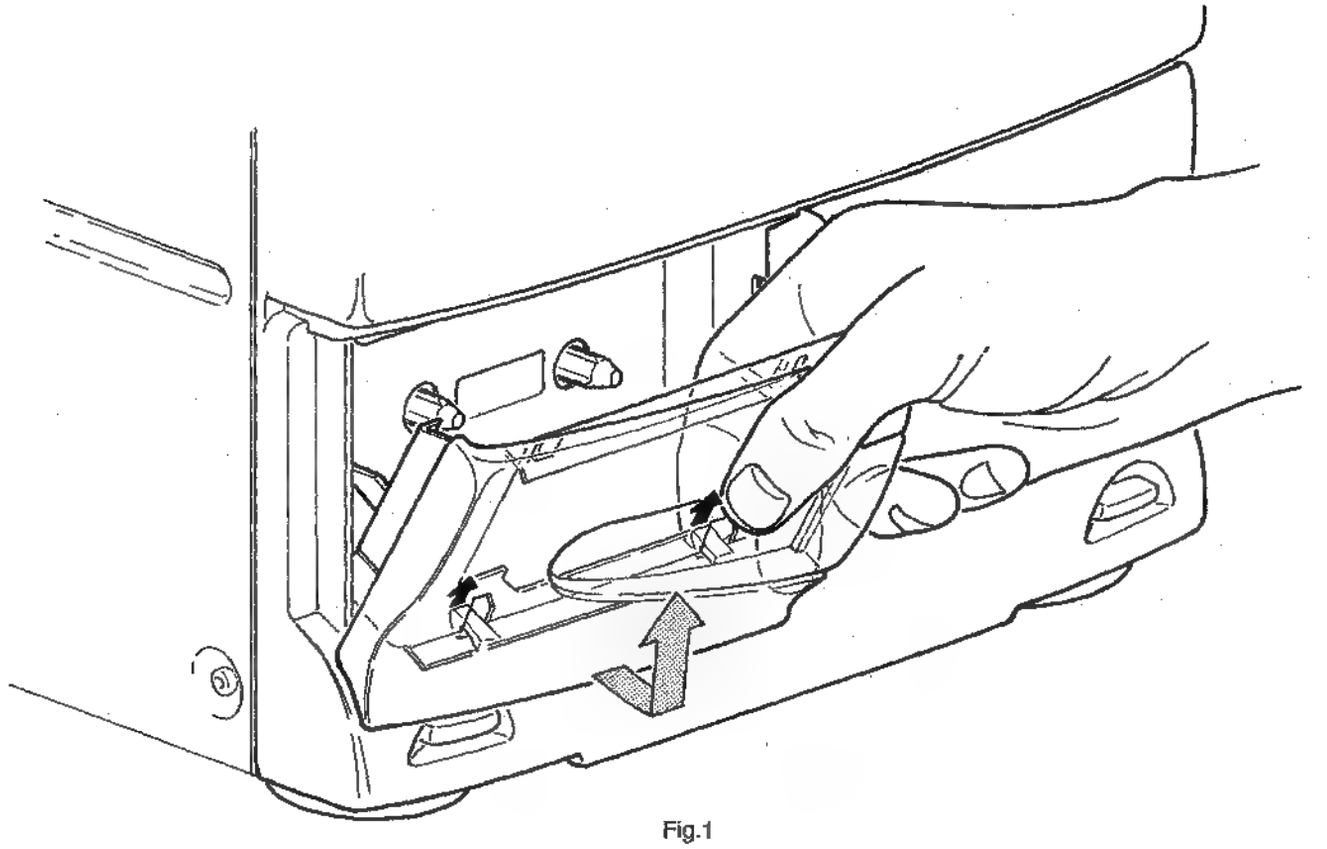
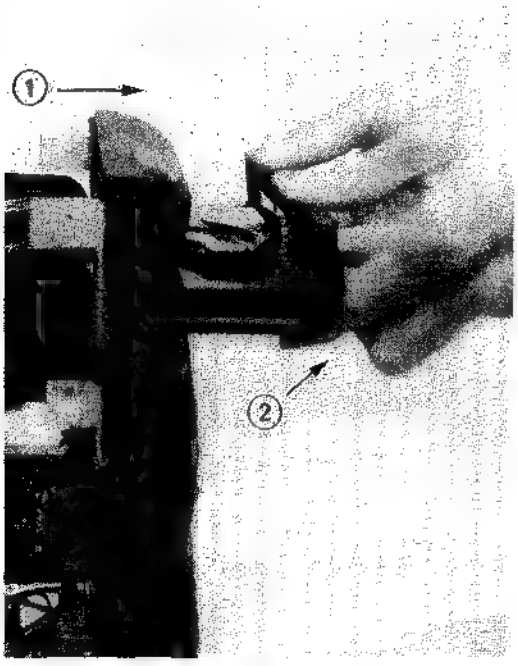
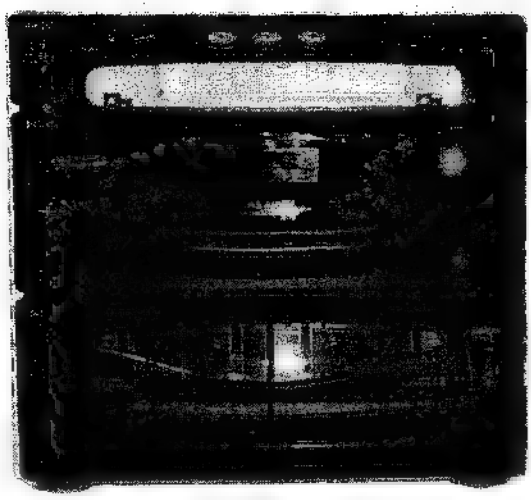


Fig.1

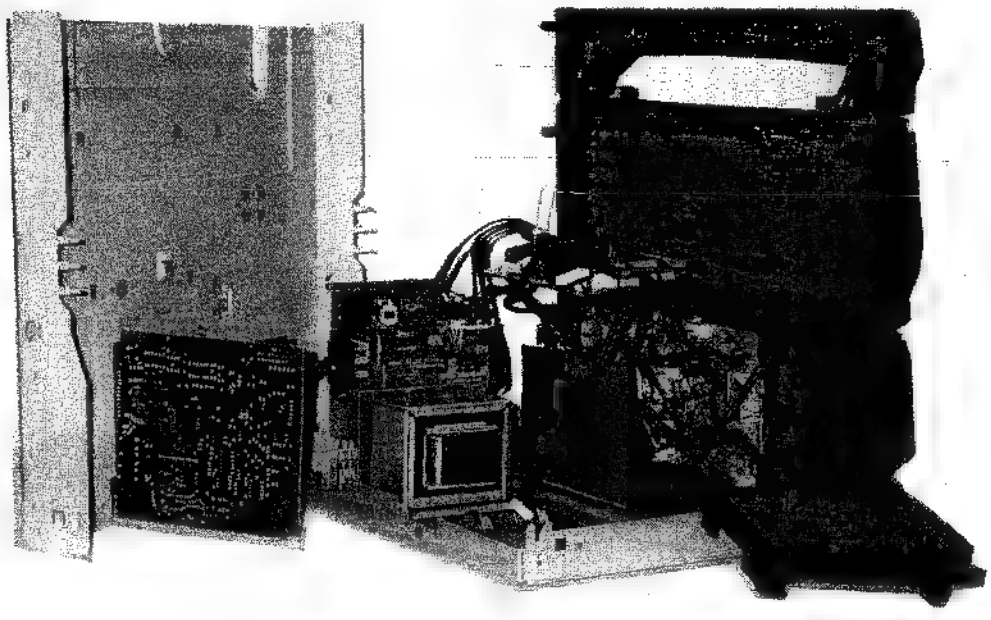
Dismantling of Front



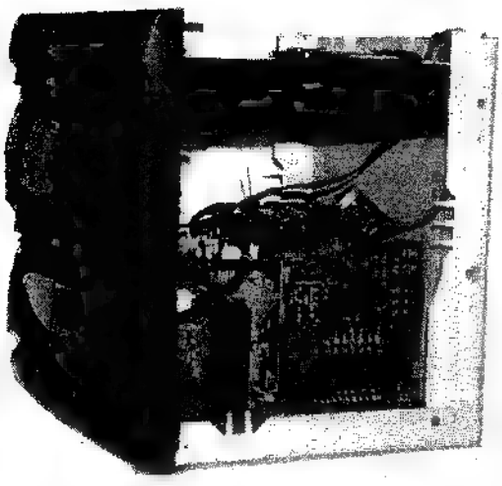
1) Remove top cover
2) Loosen 3X screw on bottom
3) Slide the CD tray out as shown in arrow 1.
4) Remove the CD door as indicated.



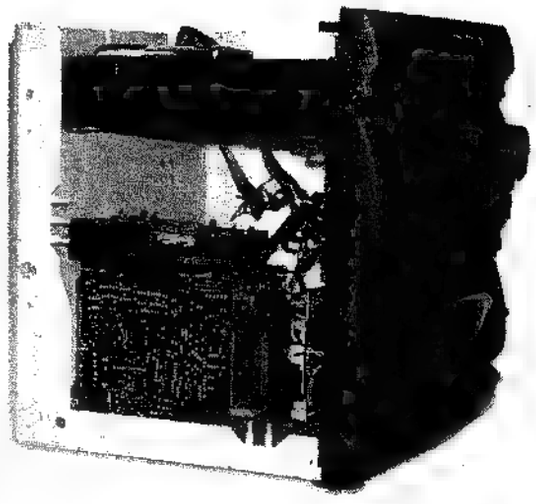
5) Loosen 2X screw from the front panel at the CD tray.



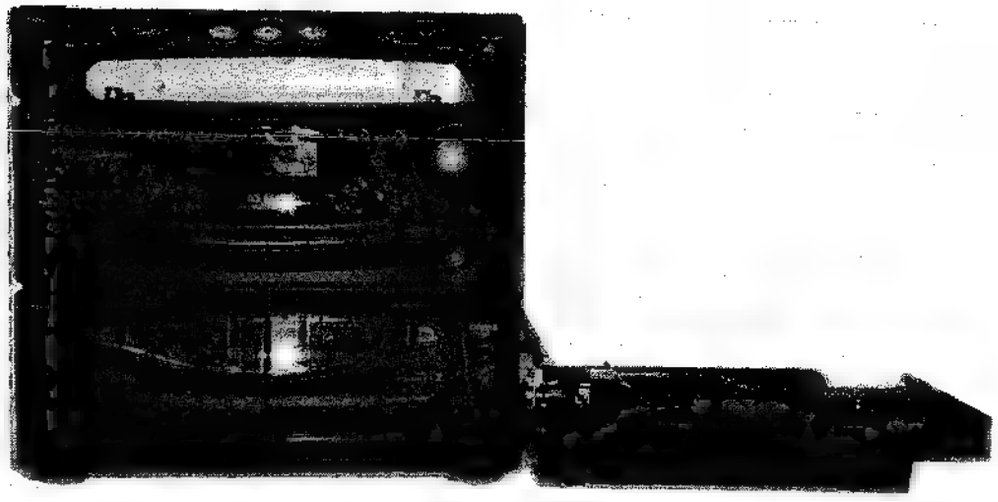
6) Possible Service Position.



7) Possible Service Position for checking transformer board.



8) Possible Service Position for checking power board.



9) Possible Service Position with CDC 3 module detach from main set.

3-5

SERVICE TEST PROGRAM

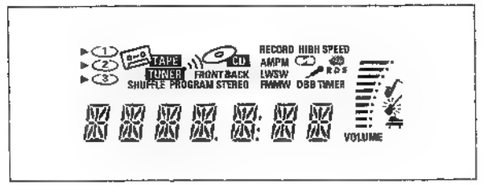


Figure 1

PRESET	Europe "EUR"	East Europe "EAS"	USA "USA"	Oversea "OSE"	Korea "KOR"
1	87.5MHz	65.81MHz	87.5MHz	87.5MHz	87.5MHz
2	108MHz	108MHz	108MHz	108MHz	108MHz
3	531kHz	74MHz	530kHz	531/530kHz	531kHz
4	1602kHz	87.5MHz	1700kHz	1602/1700kHz	1602kHz
5	558kHz	531kHz	560kHz	558/560kHz	558kHz
6	1494kHz	1602kHz	1500kHz	1494/1500kHz	1494kHz
7	153kHz	558kHz	98.0MHz	87.5/98MHz	87.5MHz
8	279kHz	1494kHz	87.5MHz	87.5MHz	87.5MHz
9	198kHz	153kHz	87.5MHz	87.5MHz	87.5MHz
10	98MHz	279kHz	87.5MHz	87.5MHz	98MHz
11	87.5MHz	198kHz	87.5MHz	98/87.5MHz	98MHz

Table 1

East Europe Tuner IF offset correction
1) Input a reference frequency 87.5MHz from the generator.
2) Proceed to the Tuner Test mode. (Press PROGRAM button).
3) Offset calibration will start to calibrate automatically. (Display will show XX)
XX : offset value

TEST	Activated with	ACTION
		Normal CD play but Errors according table 4 (Chapter 3-6) will be displayed
EEPROM TEST	Tuning Down	A testpattern will be sent to the EEPROM. 'PASS' is displayed. Otherwise ERR will be displayed.
EEPROM CLEAR	Preset Down	Load default data. Display shows NEW for 1 second. ***Caution! All presets from the customer are lost!!***
KEY TEST	Preset Up	Key numbers according table 5 are shown on the display. (see Chapter 3-6)
FAST CLOCK TEST	DBB	The clock is switched to fast mode. 'FAST' is displayed for 2 sec. Press DBB again to reset the clock to normal. 'NOM' displayed for 2 sec.
LEAVE SERVICE TESTPROGRAM	disconnect mains	

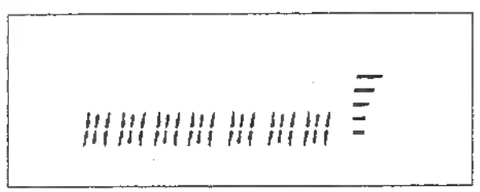


Figure 2

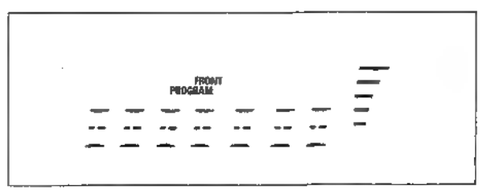


Figure 3

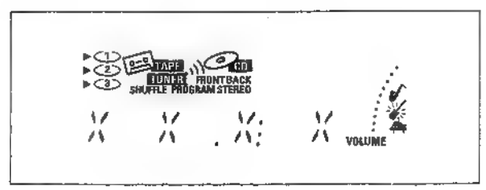


Figure 4

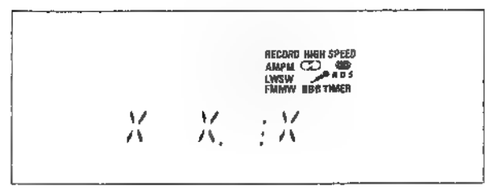
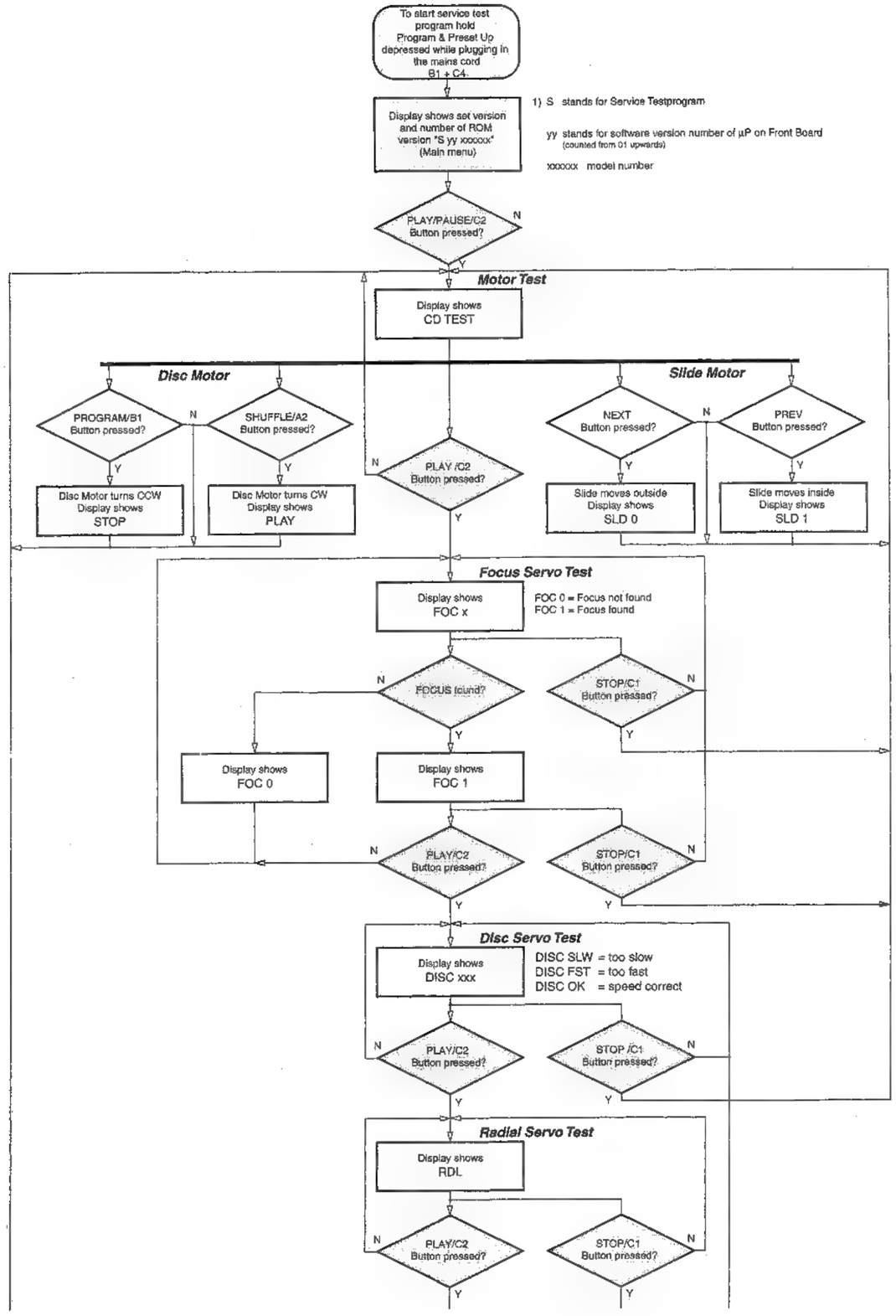


Figure 5

Error number	CD Error description
E 1002	Focus error Triggered when the focus could not found within ■ certain time when starting up the CD, or when the focus is lost for more than a certain time during playing the CD.
E 1007	Subcode error (no subcode within certain time)
E 1008	TOC error Triggered when during reading the TOC the lead-in(track nr. 0) is left. This can be caused by a misaligned Inner-switch or by a disc with a mispositioned lead-in.
E 1010	Radial error Triggered when the radial servo is not on track for ■ certain time during playing the CD.
E 1011	Sledge error Generated when the Inner-switch did not open within a certain time when the pickup is moved to the inner position.
E 1012	Fatal sledge error Triggered when the Inner-switch did not close within ■ certain time when moving the pickup inside. Inner-switch or sledge motor problem.
E 1013	Turnatble motor error Generated when the CD did not reach 75% of speed during startup within a certain time. Disc motor problem.
E 1014	Jump-offtrack error (too less grooves within time)
E 1020	PLL locked error Triggered when the PLL of the decoder did not locked within ■ certain time.
E 1070	Carousel blocked in ■ disc position
E 1071	Carousel blocked in the middle
E 1075	Drawer blocked in the middle
E 1076	Drawer blocked in open or closed state

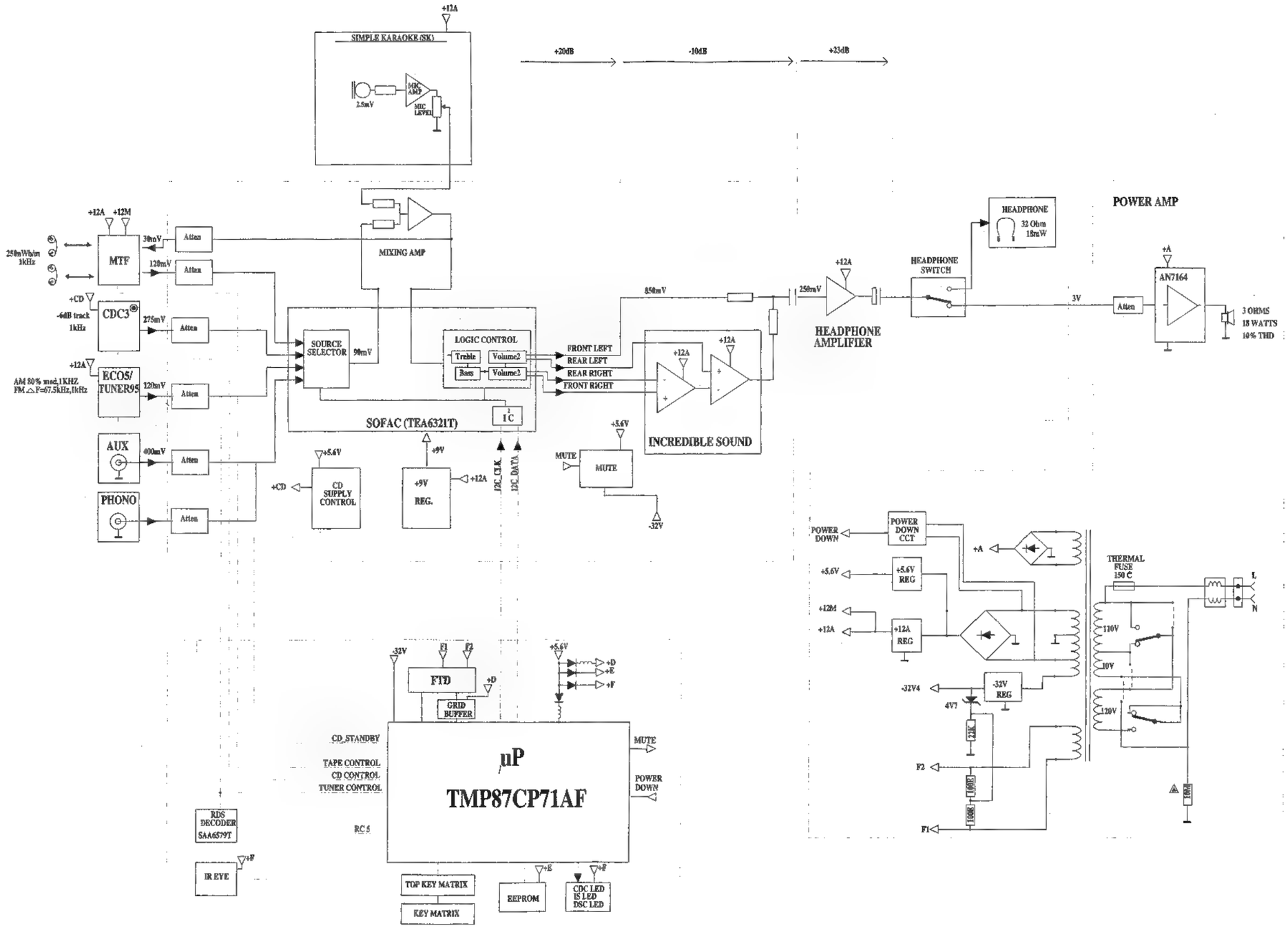
For AS660C/AS665C/AS760C/AS765C

Key activated	Display	Key activated	Display	Key activated	Display
Stop/Clear	01	Clock Set	14	Dbb	27
Program (CDC)	02	Timer Set	15	Optimal	28
Shuffle	03	Timer On/Off	16	Jazz	29
Search/Prev	04	Demo	17	Rock	30
Play/Pause	05	Volume Up	18	Pop	31
Search/Next	06	Volume Down	19	Classic	32
Disc 1	07	Tuning Down	20	HSD	33
Disc 2	08	Tuning Up	21	any RC keys	RC
Disc 3	09	Preset Down	22	Tuner/CD/Tape/	RC
CD Open Close	10	Preset Up	23	Phono-Aux	RC
Program (TU)	11	Power/Standby	24		
Band	12	Incredible Stereo	26		



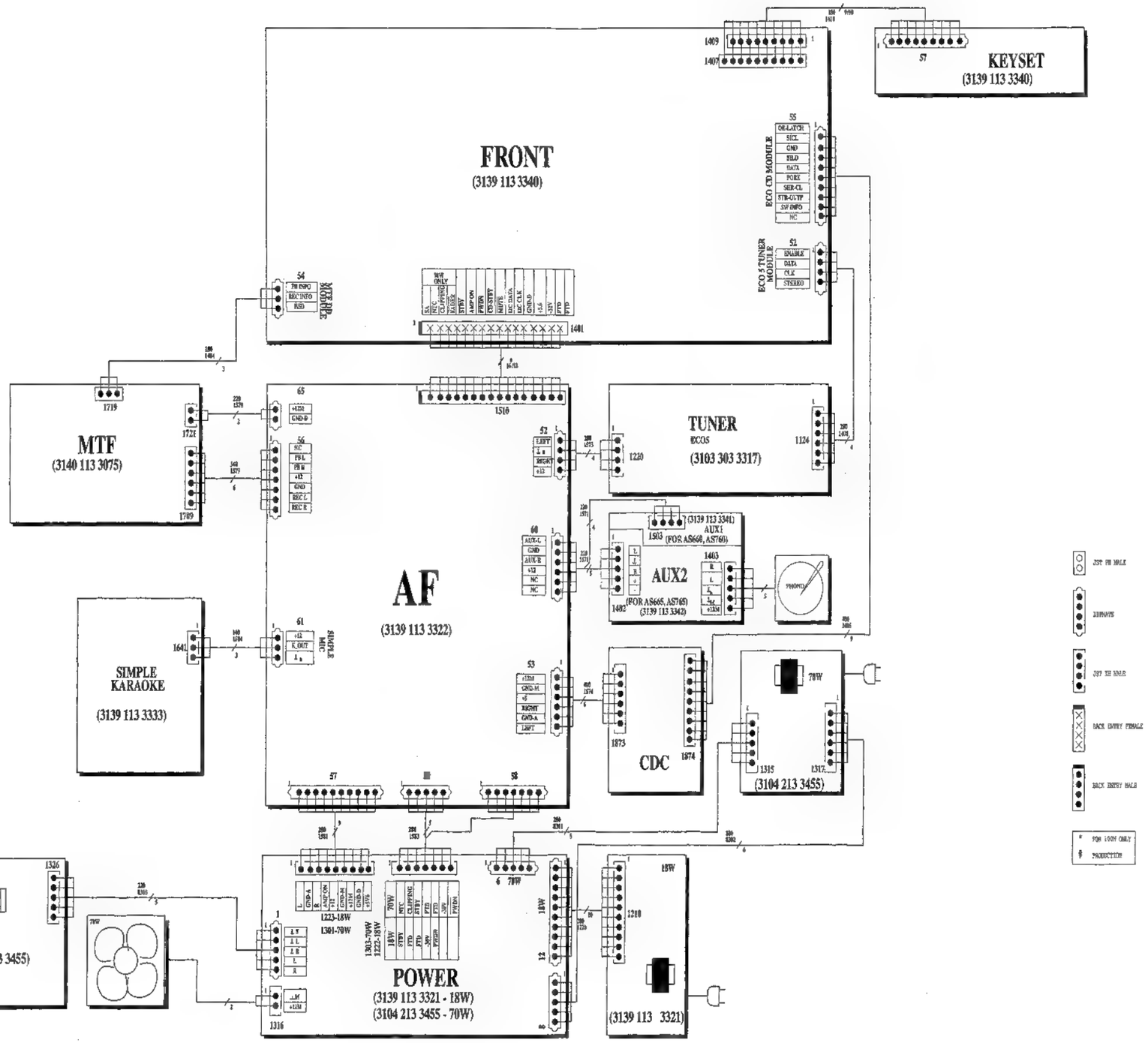
4 - 1

BLOCK DIAGRAM



5-1

Wiring Diagram



FRONT BOARD

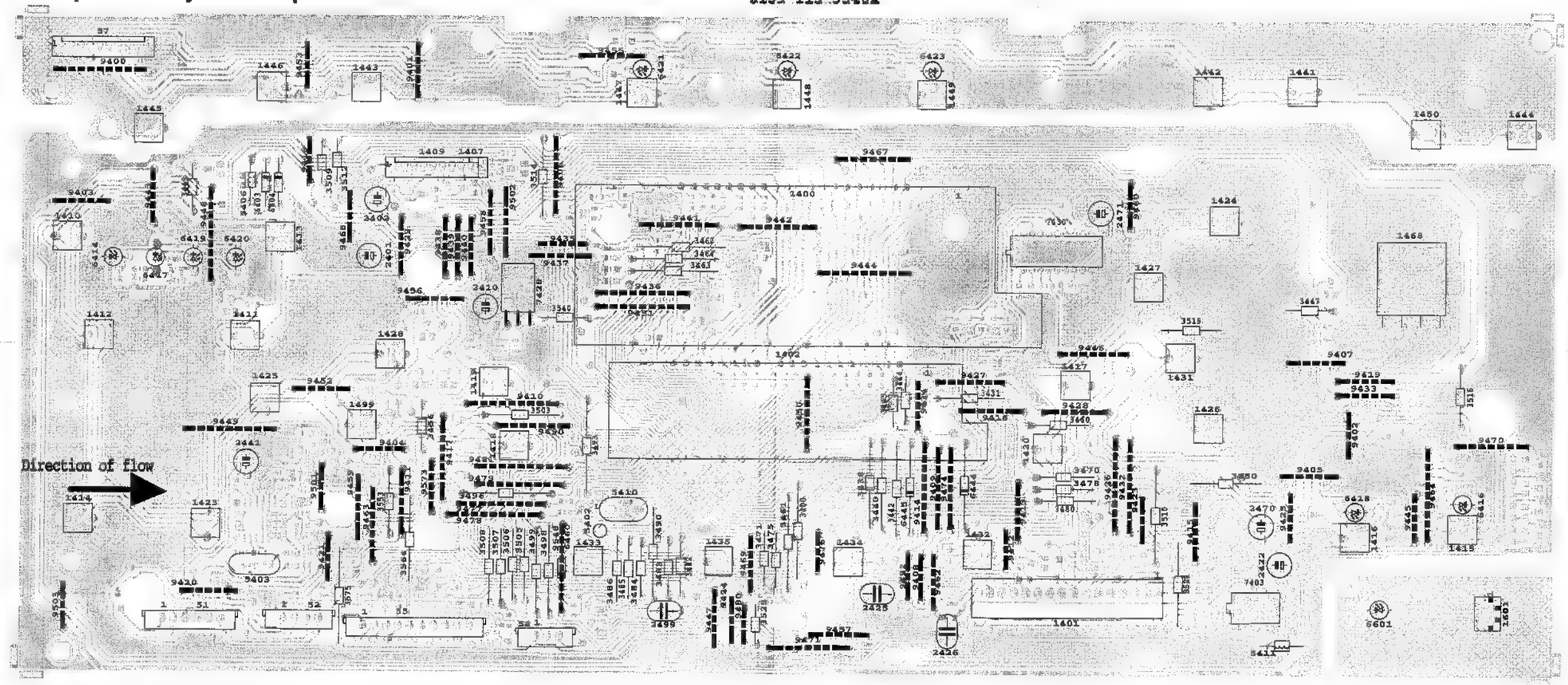
TABLE OF CONTENTS

6-1

1400 B 5	1413 B 2	1423 D 1	1433 D 4	1446 A 2	2401 B 2	2471 B 7	3445 C 6	3463 B 4	3483 D 4	3499 D 3	3512 A 2	3566 D 3	6404 B 2	6422 A 5	7430 B 7	9407 C 8	9415 D 7	9423 D 7	9433 C 9	9441 B 4	9449 C 2	9458 B 3	9469 D 5	9480 D 5
1401 D 7	1414 D 1	1424 B 8	1434 D 5	1447 A 4	2402 B 2	2499 D 4	3447 B 8	3464 B 4	3484 D 4	3503 C 3	3514 A 4	3575 D 2	6414 B 1	6423 A 6	9400 A 1	9408 D 6	9416 C 6	9424 D 5	9434 C 6	9442 B 5	9450 C 5	9459 C 2	9470 C 9	9481 C 3
1402 C 5	1415 D 9	1425 C 2	1435 D 5	1448 A 5	2410 B 3	3400 D 5	3449 B 1	3470 C 7	3485 D 4	3505 D 3	3516 C 9	5402 D 4	6416 C 9	6444 C 6	9401 A 3	9409 C 6	9417 C 3	9425 D 8	9435 B 4	9443 B 1	9451 B 4	9460 B 7	9471 D 5	9490 C 3
1407 A 3	1416 D 8	1426 C 8	1441 A 8	1449 A 6	2422 D 8	3431 C 6	3450 C 8	3471 D 5	3486 D 4	3506 D 3	3519 B 7	5403 D 2	6417 B 1	6445 C 6	9402 C 8	9410 C 3	9418 A 2	9426 C 7	9436 B 4	9444 B 5	9452 C 2	9462 D 6	9474 C 6	9501 C 2
1409 A 3	1417 C 7	1427 B 7	1442 A 8	1450 A 9	2425 D 6	3438 C 6	3456 C 3	3475 D 5	3490 D 4	3507 D 3	3521 D 7	5406 B 2	6418 C 8	6460 D 4	9403 B 1	9411 C 3	9419 C 9	9427 C 6	9437 B 4	9445 D 9	9453 A 2	9463 D 2	9476 D 5	9502 B 3
1410 B 1	1418 C 3	1428 C 3	1443 A 2	1468 B 9	2426 D 6	3440 C 6	3460 C 7	3478 C 7	3493 C 4	3508 D 3	3525 D 5	5410 C 4	6419 B 1	6601 D 9	9404 C 3	9412 D 6	9420 D 1	9428 C 7	9438 B 3	9446 C 7	9455 A 4	9464 C 9	9477 C 3	9503 D 1
1411 B 2	1419 C 3	1431 C 7	1444 A 9	1499 C 2	2441 C 2	3442 C 6	3461 D 5	3480 C 7	3496 C 3	3509 A 2	3540 B 4	5411 D 8	6420 B 2	7403 D 8	9405 C 8	9413 C 6	9421 D 2	9429 B 3	9439 B 3	9447 D 5	9456 B 3	9467 A 6	9478 D 3	9548 D 4
1412 B 1	1420 C 7	1432 D 6	1445 A 1	1601 D 9	2470 D 8	3444 C 6	3462 B 4	3482 D 4	3498 D 4	3510 D 7	3553 C 3	6403 B 2	6421 A 4	7428 B 3	9406 A 4	9414 C 6	9422 D 6	9432 C 7	9440 B 3	9448 B 1	9457 D 5	9468 B 2	9479 C 3	9573 C 3

Component Layout Componentside view

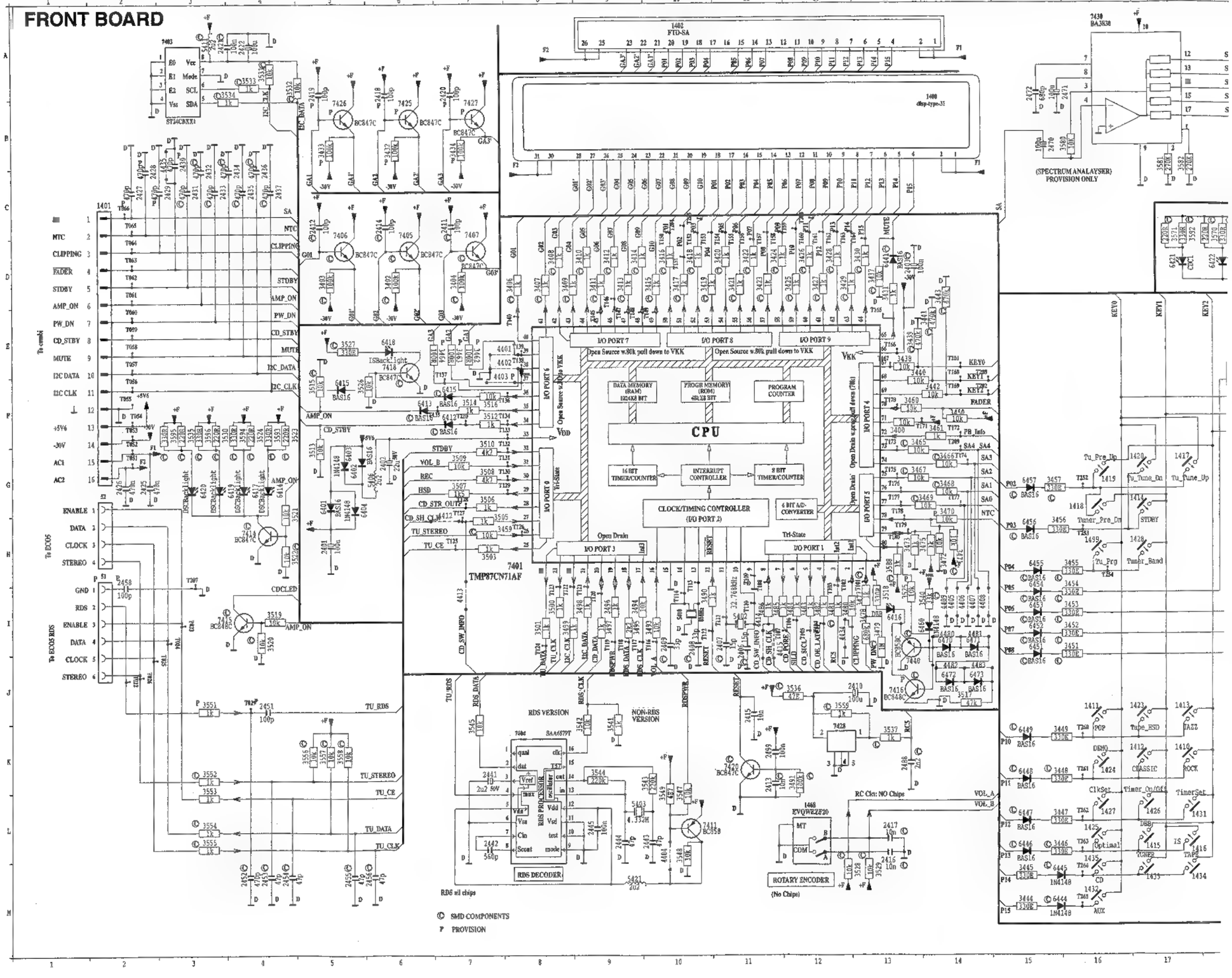
as660c/ff1-p2-960930-1 mpcs
3139 113 33402



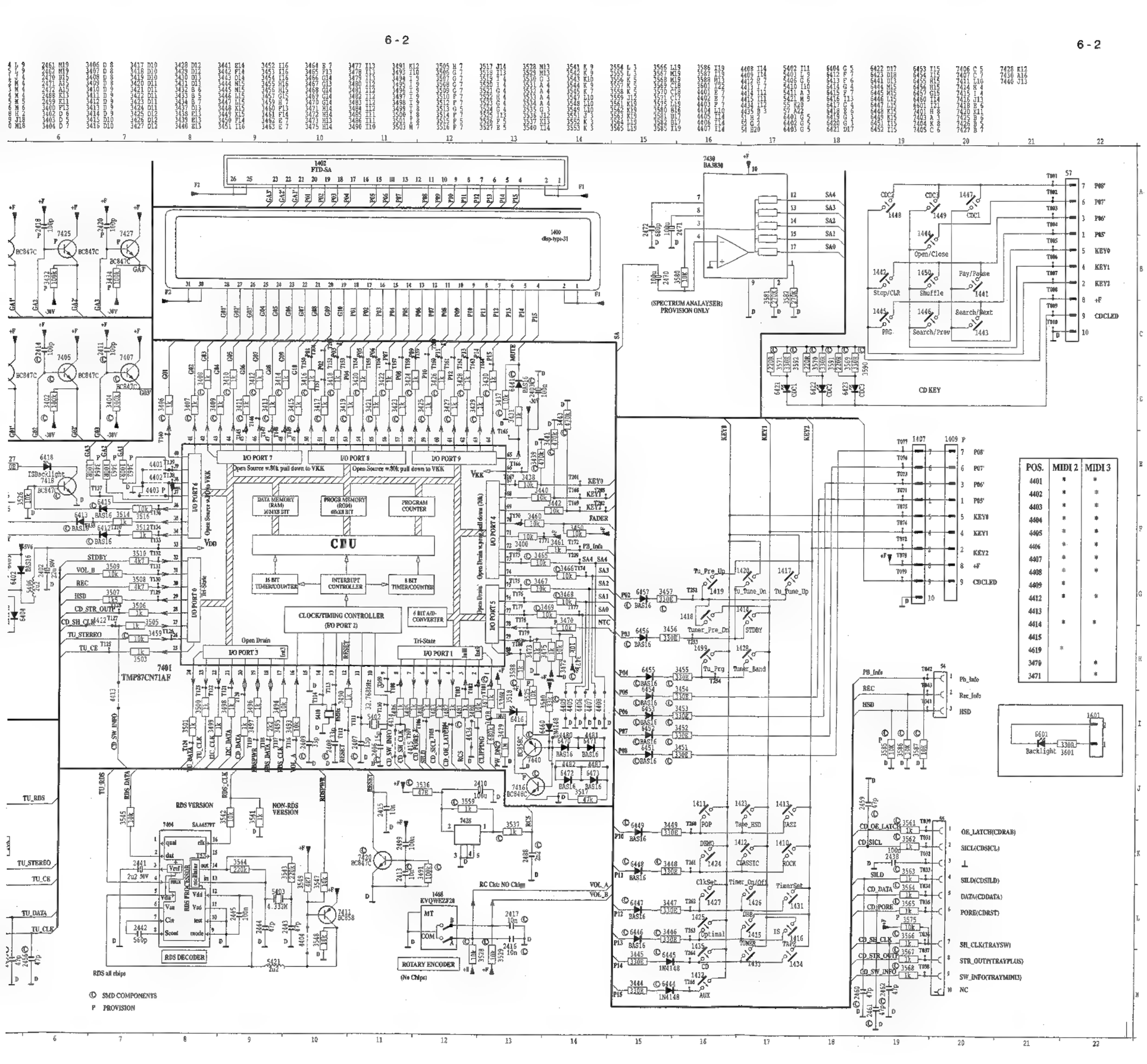
This assembly drawing shows ■ summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

6 - 2

FRONT BOARD



6 - 2



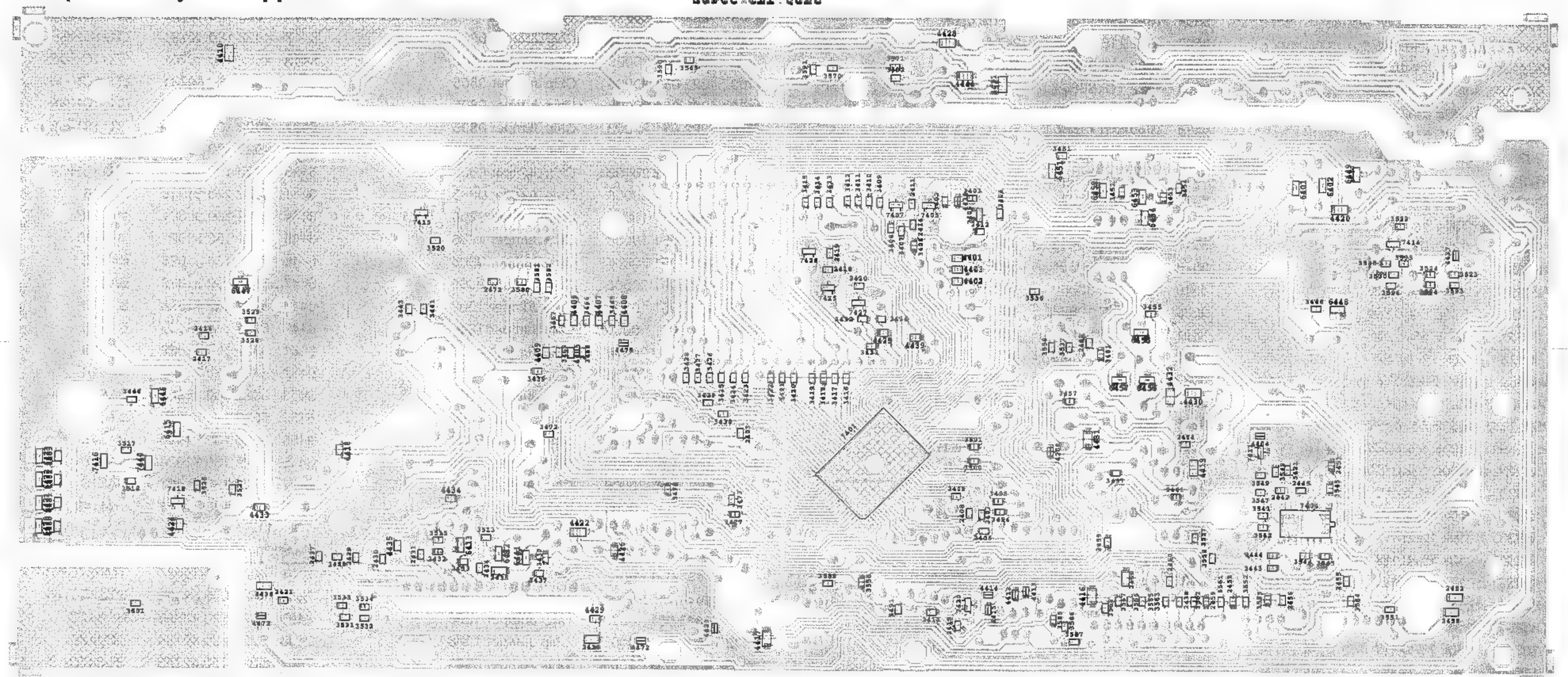
POS.	MIDI 2	MIDI 3
4401	*	*
4402	*	*
4403	*	*
4404	*	*
4405	*	*
4406	*	*
4407	*	*
4408	*	*
4409	*	
4412	*	*
4413		
4414	*	*
4415		
4619	*	
3470		*
3471		*

6-3

2403 C 5	2416 B 9	2431 D 7	2444 D 2	2460 D 3	3408 B 4	3418 C 5	3428 C 6	3446 C 9	3466 B 6	3494 D 4	3522 B 1	3533 D 8	3547 C 2	3559 C 3	3571 A 4	3592 A 4	4404 C 2	4414 D 4	4425 B 4	4436 D 8	6402 B 2	6452 B 3	7407 B 4	7440 C 9
2406 D 4	2417 C 9	2432 D 7	2445 C 2	2461 C 3	3409 B 4	3419 C 5	3429 C 5	3448 B 2	3467 B 6	3495 C 4	3523 B 1	3534 D 8	3548 C 2	3561 D 2	3580 B 7	3593 B 1	4405 C 6	4415 D 4	4426 D 6	4437 B 1	6412 D 7	6453 B 3	7411 C 2	
2407 D 4	2418 B 5	2433 D 7	2451 C 2	2462 D 3	3410 B 4	3420 C 5	3430 C 5	3451 A 3	3468 C 6	3497 C 3	3524 B 1	3535 B 1	3549 C 2	3562 D 2	3581 B 6	3594 B 1	4406 B 6	4416 D 3	4428 A 4	4438 B 4	6413 D 7	6454 B 3	7414 B 1	
2408 D 4	2419 B [illegible]	2434 D 7	2452 D 1	2472 B 7	3411 B 5	3421 C 5	3432 B 4	3452 B 3	3469 C 6	3500 C 4	3526 C 9	3536 B 3	3551 D 1	3563 D 3	3582 B 6	3595 B 1	4407 B 6	4417 D 5	4429 D 6	4439 B 4	6415 [illegible] 9	6455 B 3	7415 B 7	
2409 C 4	2420 B 5	2435 D 7	2453 D 2	2488 B 3	3412 B 5	3422 C 5	3433 C 4	3453 B 3	3472 C 6	3501 C 4	3527 C 8	3537 C 3	3552 D 2	3565 D 3	3585 D 3	3596 B 1	4408 B 6	4418 C 8	4430 C 2	4444 A 4	6441 D 7	6456 C 3	7416 C 9	
2411 B 4	2421 [illegible]	2436 D 6	2454 C 3	3402 B 4	3413 B 5	3423 C 5	3434 B 4	3454 B 3	3473 C 5	3513 D 7	3528 B 8	3541 D 2	3554 D 2	3566 D 3	3586 D 3	3601 D 9	4409 C 6	4419 C 2	4431 C 3	4472 D 6	6446 C 9	6457 C 3	7418 C 9	
2412 B 4	2427 [illegible] 8	2437 D 6	2455 D 2	3403 B 4	3414 B 5	3424 C 5	3437 D 6	3455 B 3	3477 D 5	3515 D 7	3529 B 8	3542 D 2	3555 D 2	3567 D 3	3587 D 3	4200 C 3	4410 A 8	4420 B 2	4432 C 3	4473 D 8	6447 B 8	7401 C 4	7420 D 4	
2413 D 4	2428 D 8	2438 D 3	2456 D 2	3404 B 4	3415 B 5	3425 C 5	3439 C 6	3457 C 3	3479 C 6	3517 C 9	3530 B 1	3543 D 2	3556 D 4	3568 D 3	3588 D 5	4401 B 4	4411 A 4	4422 D 6	4433 D 8	4475 B 6	6448 B 2	7404 D 2	7425 B 5	
2414 B 4	2429 D 8	2442 C 2	2458 D 1	3406 B 4	3416 C 5	3426 C 5	3441 B 7	3459 D 3	3481 C 3	3518 C 9	3531 D 8	3544 D 2	3557 D 2	3569 A 6	3590 A 6	4402 B 4	4412 D 4	4423 D 5	4434 C 7	5421 C 2	6449 A 2	7405 B 4	7426 B 5	
2415 D 4	2430 [illegible] 7	2443 D 2	2459 D 2	3407 B 4	3417 C 5	3427 C 5	3443 B 7	3465 B 6	3491 D 4	3520 B 7	3532 D 8	3545 C 2	3558 D 2	3570 A 5	3591 A 5	4403 B 4	4413 D 3	4424 D 9	4435 D 7	6401 B 2	6451 A 3	7406 B 4	7427 B 5	

9 8 7 6 5 4 3 2 1

Component Layout Copperside View

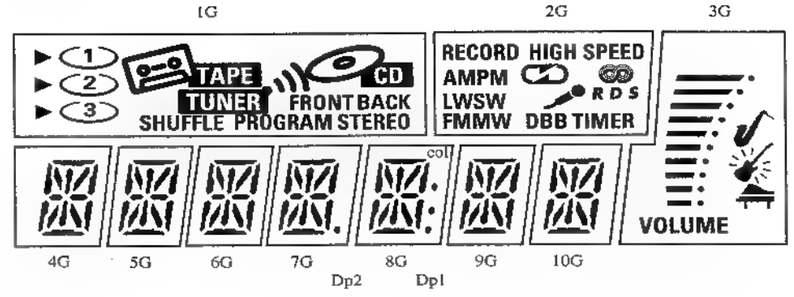


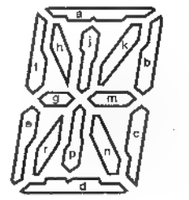
This assembly drawing shows a summary of all possible versions.

For components used in a specific version see schematic diagram respectively partslist.

9 8 7 6 5 4 3 2 1

LCD CONNECTION





(4G-10G)

(3G)

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G
P1	▷ (1)	RECORD	B1	a	a	a	a	a	a	a
P2	▷ (2)	HIGH SPEED	B2	h	h	h	h	h	h	h
P3	▷ (3)	AM	B3	j , p	j , p	j , p	j , p	j , p	j , p	j , p
P4	1 2 3	PM	B4	k	k	k	k	k	k	k
P5	◯ (1)	R·D·S	B5	b	b	b	b	b	b	b
P6	◯ (2)	Z	B6	f	f	f	f	f	f	f
P7	◯ (3)	(	B7	m	m	m	m	m	m	m
P8	TAPE	)	B8	g	g	g	g	g	g	g
P9	TUNER	mic	B9	c	c	c	c	c	c	c
P10	CD	LW	B10	e	e	e	e	e	e	e
P11	FRONT	SW	VOLUME S1	r	r	r	r	r	r	r
P12	BACK	FM	sax	n	n	n	n	n	n	n
P13	SHUFFLE	MW	guitar	d	d	d	d	d	d	d
P14	PROGRAM	DBB	drum	-	-	-	Dp2	Dp1	-	-
P15	STEREO	TIMER	piano	-	-	-	-	col	-	-

6-4

ELECTRICAL PARTS LIST - FRONT BOARD

MISCELLANEOUS

1400	4822 135 00014	FTD Display
1410	4822 276 13114	Tact Switch
1411	4822 276 13114	Tact Switch
1412	4822 276 13114	Tact Switch
1413	4822 276 13114	Tact Switch
1414	4822 276 13114	Tact Switch
1415	4822 276 13114	Tact Switch
1416	4822 276 13114	Tact Switch
1417	4822 276 13114	Tact Switch
1418	4822 276 13114	Tact Switch
1419	4822 276 13114	Tact Switch
1420	4822 276 13114	Tact Switch
1423	4822 276 13114	Tact Switch
1424	4822 276 13114	Tact Switch
1425	4822 276 13114	Tact Switch
1426	4822 276 13114	Tact Switch
1427	4822 276 13114	Tact Switch
1428	4822 276 13114	Tact Switch
1431	4822 276 13114	Tact Switch
1432	4822 276 13114	Tact Switch
1433	4822 276 13114	Tact Switch
1434	4822 276 13114	Tact Switch
1435	4822 276 13114	Tact Switch
1441	4822 276 13114	Tact Switch
1442	4822 276 13114	Tact Switch
1443	4822 276 13114	Tact Switch
1444	4822 276 13114	Tact Switch
1445	4822 276 13114	Tact Switch
1446	4822 276 13114	Tact Switch
1447	4822 276 13114	Tact Switch
1448	4822 276 13114	Tact Switch
1449	4822 276 13114	Tact Switch
1450	4822 276 13114	Tact Switch
1468	4822 101 21261	Rotary Encoder
1499	4822 276 13114	Tact Switch

CAPACITORS

2401	4822 124 41584	100µF 20% 10V
2402	4822 124 41596	22µF 20% 50V
2403	4822 126 13296	100nF 10% 16V
2406	5322 122 32481	15pF 5% 50V
2407	5322 122 32481	15pF 5% 50V
2408	5322 122 32659	33pF 5% 50V
2409	5322 122 32659	33pF 5% 50V
2410	4822 124 41584	100µF 20% 10V
2411	5322 122 32531	100pF 5% 50V
2412	5322 122 32531	100pF 5% 50V
2413	4822 122 33177	10nF 20% 50V
2414	5322 122 32531	100pF 5% 50V
2415	5322 122 13296	100nF 10% 16V
2416	4822 122 33177	10nF 20% 50V
2417	4822 122 33177	10nF 20% 50V
2421	4822 126 13296	100nF 10% 16V
2422	4822 124 41584	100µF 20% 10V
2425	4822 121 51252	470nF 5% 63V
2426	4822 121 51252	470nF 5% 63V
2427	5322 122 34099	470pF 10% 63V
2428	5322 122 34099	470pF 10% 63V
2429	5322 122 34099	470pF 10% 63V
2430	5322 122 34099	470pF 10% 63V
2431	5322 122 34099	470pF 10% 63V
2432	5322 122 34099	470pF 10% 63V
2433	5322 122 34099	470pF 10% 63V
2434	5322 122 34099	470pF 10% 63V
2435	4822 126 14067	470pF 10% 50V.
2436	4822 126 14067	470pF 10% 50V.
2437	5322 122 34099	470pF 10% 63V
2438	4822 126 13296	100nF 10% 16V
2453	5322 122 32452	47pF 5% 63V
2454	5322 122 32452	47pF 5% 63V
2455	5322 122 32452	47pF 5% 63V
2456	5322 122 32452	47pF 5% 63V
2459	5322 122 32452	47pF 5% 63V
2460	5322 122 32452	47pF 5% 63V
2461	5322 122 32452	47pF 5% 63V
2462	4822 122 31772	47pF 2% 63V
2488	4822 122 33175	2,2nF 20% 50V
2499	5322 121 42386	100nF 5% 63V

RESISTORS

3400	4822 116 83864	10k 5% 0,5W
3402	4822 051 10104	100k 2% 0,25W
3403	4822 051 20104	100k 5% 0,1W
3404	4822 051 20104	100k 5% 0,1W
3406	4822 051 10102	1k 2% 0,25W
3407	4822 051 10102	1k 2% 0,25W
3408	4822 051 10102	1k 2% 0,25W
3409	4822 051 10102	1k 2% 0,25W
3410	4822 051 10102	1k 2% 0,25W
3411	4822 051 10102	1k 2% 0,25W
3412	4822 051 10102	1k 2% 0,25W
3413	4822 051 10102	1k 2% 0,25W
3414	4822 051 10102	1k 2% 0,25W
3415	4822 051 10102	1k 2% 0,25W
3416	4822 051 10102	1k 2% 0,25W
3417	4822 051 10102	1k 2% 0,25W
3418	4822 051 10102	1k 2% 0,25W
3419	4822 051 10102	1k 2% 0,25W
3420	4822 051 10102	1k 2% 0,25W
3421	4822 051 10102	1k 2% 0,25W
3422	4822 051 10102	1k 2% 0,25W
3423	4822 051 10102	1k 2% 0,25W
3424	4822 051 10102	1k 2% 0,25W
3425	4822 051 10102	1k 2% 0,25W
3426	4822 051 10102	1k 2% 0,25W
3427	4822 051 10102	1k 2% 0,25W
3428	4822 051 10102	1k 2% 0,25W
3429	4822 051 10102	1k 2% 0,25W
3430	4822 051 10102	1k 2% 0,25W
3431	4822 050 11002	1k 1% 0,4W
3432	4822 051 20104	100k 5% 0,1W
3433	4822 051 20104	100k 5% 0,1W
3434	4822 051 20104	100k 5% 0,1W
3437	4822 117 10833	10k 1% 0,1W
3438	4822 116 83864	10k 5% 0,5W
3439	4822 051 20474	470k 5% 0,1W
3440	4822 116 83864	10k 5% 0,5W
3441	4822 051 20474	470k 5% 0,1W
3442	4822 116 83864	10k 5% 0,5W
3443	4822 051 20474	470k 5% 0,1W
3444	4822 116 52219	330E 5% 0,5W
3445	4822 116 52219	330E 5% 0,5W
3446	4822 051 20331	330E 5% 0,1W
3447	4822 116 52219	330E 5% 0,5W
3448	4822 051 20331	330E 5% 0,1W
3449	4822 116 52219	330E 5% 0,5W
3451	4822 051 20331	330E 5% 0,1W
3452	4822 051 20331	330E 5% 0,1W
3453	4822 051 20331	330E 5% 0,1W
3454	4822 051 20331	330E 5% 0,1W
3455	4822 051 20331	330E 5% 0,1W
3456	4822 116 52219	330E 5% 0,5W
3457	4822 051 20331	330E 5% 0,1W
3459	4822 117 10833	10k 1% 0,1W
3460	4822 116 83864	10k 5% 0,5W
3461	4822 050 11002	1k 1% 0,4W
3462	4822 116 52175	100E 5% 0,5W
3463	4822 116 52175	100E 5% 0,5W
3464	4822 116 52175	100E 5% 0,5W
3465	4822 117 10833	10k 1% 0,1W
3466	4822 117 10833	10k 1% 0,1W
3467	4822 117 10833	10k 1% 0,1W
3468	4822 117 10833	10k 1% 0,1W
3469	4822 117 10833	10k 1% 0,1W
3470	4822 116 83864	10k 5% 0,5W
3471	4822 116 83864	10k 5% 0,5W
3472	4822 117 10833	10k 1% 0,1W
3475	4822 050 11002	1k 1% 0,4W
3477	4822 051 10102	1k 2% 0,25W
3478	4822 116 52298	680k 5% 0,5W
3479	4822 051 20105	1M 5% 0,1W
3480	4822 116 83864	10k 5% 0,5W
3481	4822 051 10102	1k 2% 0,25W
3482	4822 050 11002	1k 1% 0,4W
3483	4822 050 11002	1k 1% 0,4W
3484	4822 050 11002	1k 1% 0,4W
3485	4822 050 11002	1k 1% 0,4W
3486	4822 050 11002	1k 1% 0,4W
3490	4822 050 11002	1k 1% 0,4W
3491	4822 051 20104	100k 5% 0,1W
3493	4822 116 83864	10k 5% 0,5W
3494	4822 117 10833	10k 1% 0,1W
3495	4822 117 11449	2k2 1% 0,1W
3496	4822 050 11002	1k 1% 0,4W
3497	4822 051 10102	1k 2% 0,25W
3498	4822 050 11002	1k 1% 0,4W
3499	4822 050 11002	1k 1% 0,4W
3500	4822 051 10102	1k 2% 0,25W
3501	4822 051 10102	1k 2% 0,25W
3503	4822 050 11002	1k 1% 0,4W
3505	4822 050 11002	1k 1% 0,4W
3506	4822 050 11002	1k 1% 0,4W
3507	4822 116 52263	2k7 5% 0,5W
3508	4822 116 52283	4k7 5% 0,5W
3509	4822 116 83864	10k 5% 0,5W
3510	4822 116 52283	4k7 5% 0,5W
3512	4822 050 11002	1k 1% 0,4W
3513	4822 117 10833	10k 1% 0,1W
3514	4822 050 11002	1k 1% 0,4W
3515	4822 117 10833	10k 1% 0,1W
3516	4822 116 83864	10k 5% 0,5W
3517	4822 051 20473	47k 5% 0,1W
3518	4822 051 20331	330E 5% 0,1W
3519	4822 116 83864	10k 5% 0,5W
3520	4822 117 10833	10k 1% 0,1W
3521	4822 116 83864	10k 5% 0,5W
3522	4822 117 10833	10k 1% 0,1W
3523	4822 051 20331	330E 5% 0,1W
3524	4822 051 20391	390E 5% 0,1W
3525	4822 050 24705	4M7 1% 0,6W
3526	4822 117 10833	10k 1% 0,1W
3527	4822 051 20331	330E 5% 0,1W
3528	4822 117 10833	10k 1% 0,1W
3529	4822 117 10833	10k 1% 0,1W
3530	4822 051 20391	390E 5% 0,1W
3531	4822 117 10833	10k 1% 0,1W
3532	4822 117 10833	10k 1% 0,1W
3533	4822 051 10102	1k 2% 0,25W
3534	4822 051 10102	1k 2% 0,25W
3535	4822 051 20391	390E 5% 0,1W
3536	4822 051 20479	47E 5% 0,1W
3537	4822 051 10102	1k 2% 0,25W
3540	4822 116 52271	33k 5% 0,5W
3552	4822 051 10102	1k 2% 0,25W
3553	4822 050 11002	1k 1% 0,4W
3554	4822 051 10102	1k 2% 0,25W
3555	4822 051 10102	1k 2% 0,25W
3556	4822 117 10833	10k 1% 0,1W
3557	4822 117 10833	10k 1% 0,1W
3558	4822 117 10833	10k 1% 0,1W
3559	4822 051 10102	1k 2% 0,25W
3561	4822 051 10102	1k 2% 0,25W

3562	4822 051 10102	1k 2% 0,25W
3563	4822 051 10102	1k 2% 0,25W
3564	4822 050 11002	1k 1% 0,4W
3565	4822 051 10102	1k 2% 0,25W
3566	4822 051 10102	1k 2% 0,25W
3567	4822 051 10102	1k 2% 0,25W
3568	4822 051 10102	1k 2% 0,25W
3569	4822 051 20331	330E 5% 0,1W
3570	4822 051 20331	330E 5% 0,1W
3571	4822 051 20331	330E 5% 0,1W
3586	4822 117 10833	10k 1% 0,1W
3587	4822 117 10833	10k 1% 0,1W
3588	4822 117 10833	10k 1% 0,1W
4401	4822 051 20008	Chip Jumper 0805
4402	4822 051 20008	Chip Jumper 0805
4403	4822 051 20008	Chip Jumper 0805
4405	4822 051 20008	Chip Jumper 0805
4406	4822 051 20008	Chip Jumper 0805
4407	4822 051 20008	Chip Jumper 0805
4408	4822 051 20008	Chip Jumper 0805
4409	4822 051 20008	Chip Jumper 0805
4410	4822 051 10008	Chip Jumper 1206
4411	4822 051 10008	Chip Jumper 1206
4412	4822 051 20008	Chip Jumper 0805
4414	4822 051 20008	Chip Jumper 0805
4416	4822 051 10008	Chip Jumper 1206
4417	4822 051 10008	Chip Jumper 1206
4418	4822 051 20008	Chip Jumper 0805
4419	4822 051 10008	Chip Jumper 1206
4420	4822 051 10008	Chip Jumper 1206
4422	4822 051 10008	Chip Jumper 1206
4423	4822 051 20008	Chip Jumper 0805
4424	4822 051 20008	Chip Jumper 0805
4425	4822 051 20008	Chip Jumper 0805
4426	4822 051 20008	Chip Jumper 0805
4427	4822 051 10008	Chip Jumper 1206
4428	4822 051 10008	Chip Jumper 1206
4429	4822 051 20008	Chip Jumper 0805
4430	4822 051 10008	Chip Jumper 1206
4431	4822 051 10008	Chip Jumper 1206
4432	4822 051 10008	Chip Jumper 1206
4433	4822 051 20008	Chip Jumper 0805
4434	4822 051 20008	Chip Jumper 0805
4435	4822 051 20008	Chip Jumper 0805
4436	4822 051 10008	Chip Jumper 1206
4444	4822 051 10008	Chip Jumper 1206
4472	4822 051 20008	Chip Jumper 0805
4473	4822 051 20008	Chip Jumper 0805
4475	4822 051 20008	Chip Jumper 0805

COILS & FILTERS

5402	4822 242 70938	X'tal Resonator 32,768kHz
5406	4822 157 70299	Coil 2µ2 10%
5410	5322 242 73697	Ceram Resonator 8MHz
5411	4822 157 71667	Coil 2µ2 10%

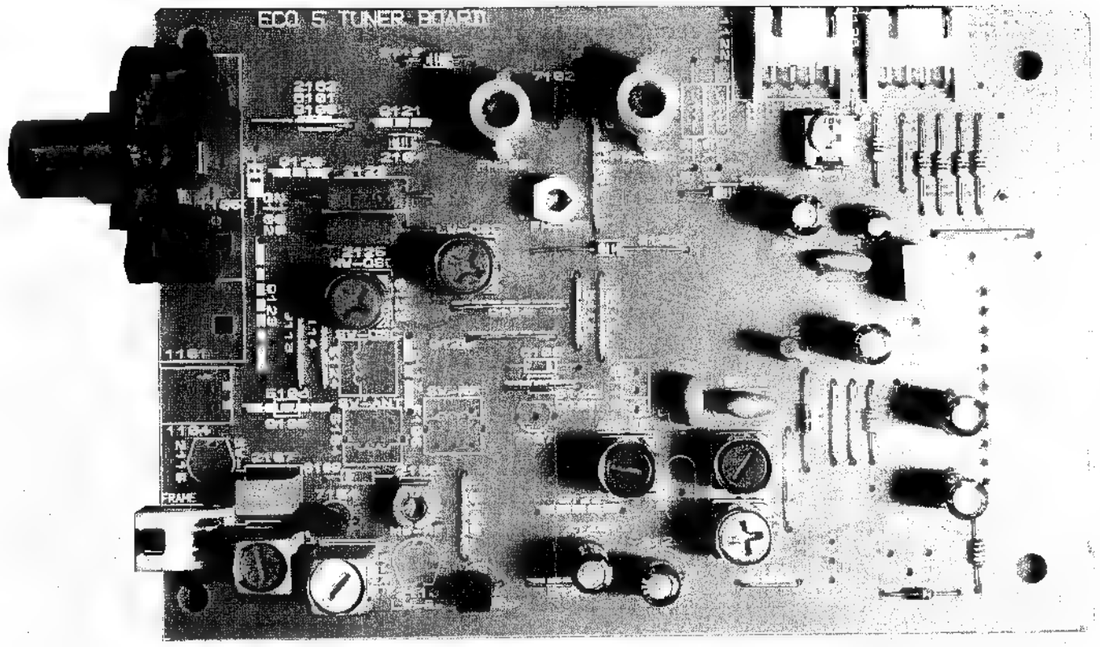
DIODES

6401	5322 130 31928	BAS16
6402	5322 130 31928	BAS16
6403	4822 130 34281	BZX79-C15
6404	4822 130 34281	BZX79-C15
6412	5322 130 31928	BAS16
6413	5322 130 31928	BAS16
6414	4822 130 10791	LTL-1CHGE
6415	5322 130 31928	BAS16
6416	4822 130 10792	LTL-1CHPE
6417	4822 130 10791	LTL-1CHGE
6418	4822 130 10791	LTL-1CHGE
6419	4822 130 10791	LTL-1CHGE
6420	4822 130 10791	LTL-1CHGE
6421	4822 130 10791	LTL-1CHGE
6422	4822 130 10791	LTL-1CHGE
6423	4822 130 10791	LTL-1CHGE
6441	5322 130 31928	BAS16
6444	4822 130 30621	1N4148
6445	4822 130 30621	1N4148
6446	5322 130 31928	BAS16
6447	5322 130 31928	BAS16
6448	5322 130 31928	BAS16
6449	5322 130 31928	BAS16
6451	5322 130 31928	BAS16
6452	5322 130 31928	BAS16
6453	5322 130 31928	BAS16
6454	5322 130 31928	BAS16
6455	5322 130 31928	BAS16
6456	5322 130 31928	BAS16
6457	5322 130 31928	BAS16
6460	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7401	4822 209 15004	TMP87CP71F - 322S51241
7403	4822 209 31508	ST24C01B1
7405	5322 130 42755	BC847C
7406	5322 130 42755	BC847C
7407	5322 130 42755	BC847C
7414	5322 130 42755	BC847C
7415	5322 130 42136	BC848C
7418	5322 130 42136	BC848C
7420	5322 130 42755	BC847C
7428	4822 130 10165	GP1U28XP
7440	4822 130 42513	BC858C

NOTE: Only the parts mentioned in this list are normal service spare parts.

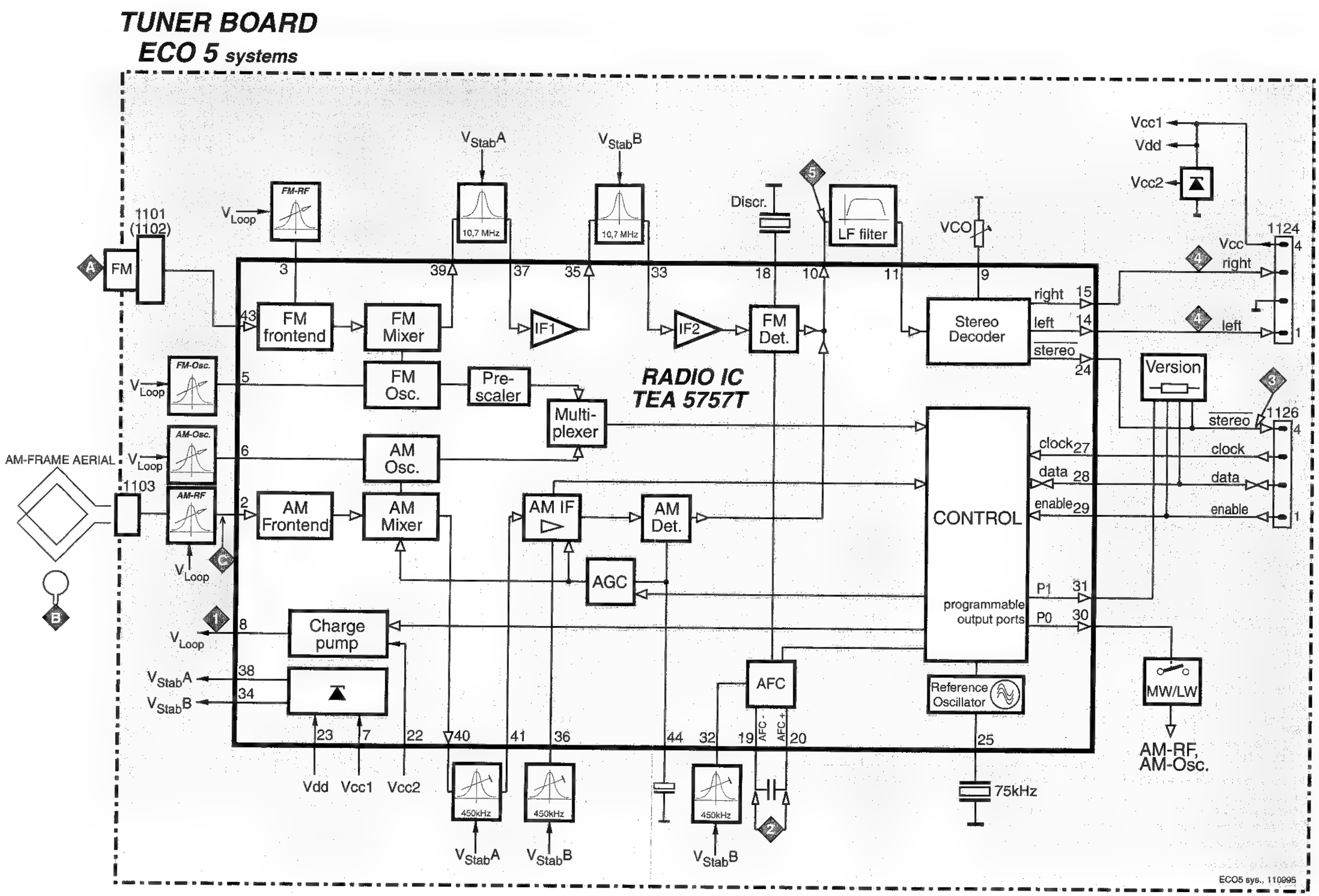


TUNER BOARD ECO5

TABLE OF CONTENTS

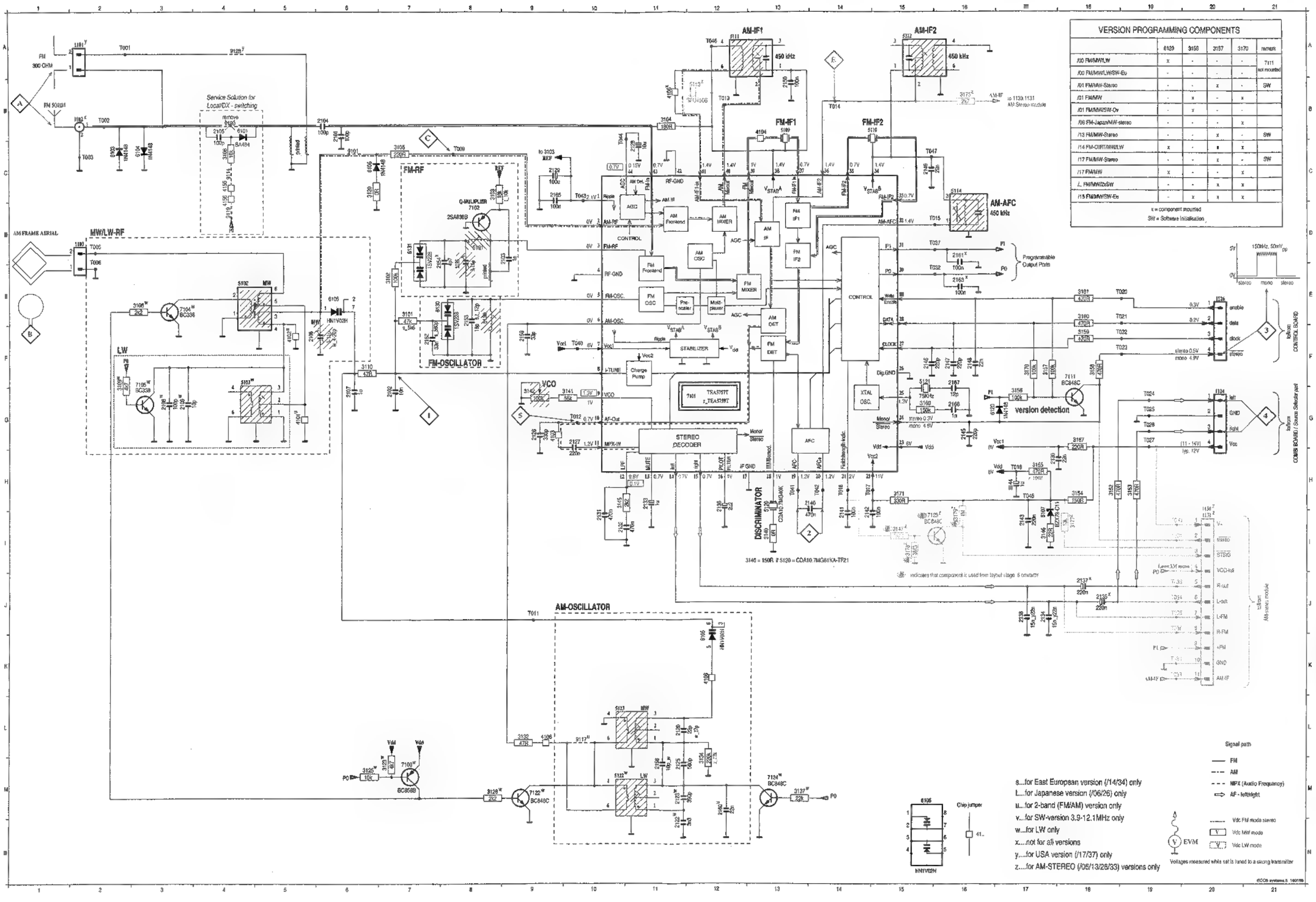
7B-1

BLOCKDIAGRAM



7B - 3

TUNER BOARD ECO5 / Systems



MISCELLANEOUS

1101	4822 267 31505	SOCKET 2P CLICKFIT (/14)
1102	4822 267 10283	SOCKET COAXIAL 75Ω

CAPACITORS

2101	5322 122 32531	100pF 5% 50V
2102	4822 122 33177	10nF 20% 50V
2103	5322 122 34123	1nF 10% 50V
2104	4822 122 33195	100pF 10% 50V
2106	4822 125 50355	TRIMCAP. 4-20pF (/00,/17)
2106	4822 125 60101	TRIMCAP. 3-11pF (/01,/14)
2107	4822 121 51319	1µF 10% 63V
2108	5322 122 32531	100pF 5% 50V (/00,/17)
2109	5322 122 32448	10pF 5% 50V (/00,/17)
2120	5322 122 31946	27pF 5% 63V (/00,/17)
2120	5322 122 32658	22pF 5% 50V (/01,/14)
2122	4822 122 33891	3.3nF 10% 63V (/00,/17)
2123	4822 121 51254	390pF 1% 400V (/00,/17)
2125	4822 121 51381	560pF 5% 400V
2126	5322 122 31863	330pF 5% 50V
2127	4822 122 32927	220nF +80-20% 50V
2128	4822 124 41579	10µF 20% 50V
2129	4822 124 41584	100µF 20% 10V
2130	4822 126 11585	22nF +80-20% 25V
2131	4822 122 33325	470nF 16V
2132	4822 122 33325	470nF 16V
2133	4822 124 40242	1µF 20% 63V
2134	4822 122 33128	15nF 10% 63V
2134	5322 122 32654	22nF 10% 63V (/14)
2135	4822 124 40746	0.22µF 20% 63V
2136	4822 122 33128	15nF 10% 63V
2136	5322 122 32654	22nF 10% 63V (/14)
2137	4822 124 40746	0.22µF 20% 63V
2138	4822 124 41576	2.2µF 20% 50V
2140	4822 121 51252	470nF 5% 63V
2141	4822 122 31947	100nF 20% 63V
2142	4822 122 31947	100nF 20% 63V
2143	4822 122 32927	220nF +80-20% 50V
2144	4822 124 40242	1µF 20% 63V
2145	4822 122 33575	220pF 5% 50V
2146	4822 122 33575	220pF 5% 50V
2147	4822 122 33575	220pF 5% 50V
2148	4822 126 11585	22nF +80-20% 25V
2149	5322 122 32654	22nF 10% 63V
2150	4822 122 31947	100nF 20% 63V

CAPACITORS

2152	5322 116 80853	560pF 5% 63V (/17)
2152	4822 122 33342	33nF 10% 63V
2153	4822 122 32139	12pF 2% 63V (/17)
2153	4822 126 13689	18pF 1% 63V
2155	4822 125 60101	3P0-11pF N45 100V
2158	5322 122 32448	10pF 5% 50V (/00,/17)
2159	5322 122 32659	33pF 5% 50V
2160	5322 122 32654	22nF 10% 63V (/01,/14)
2161	4822 122 31947	100nF 20% 63V (/00,/17)
2163	4822 122 31947	100nF 20% 63V (/00,/17)
2165	4822 122 31947	100nF 20% 63V
2166	5322 122 34123	1nF 10% 50V
2167	4822 122 32139	12pF 2% 63V

RESISTORS

3101	4822 051 20562	5k6 5% 0.1W (/17)
3101	4822 051 20473	47k 5% 0.1W
3102	4822 051 20104	100k 5% 0.1W
3103	4822 051 20183	18k 5% 0.1W
3104	4822 051 20181	180Ω 5% 0.1W
3105	4822 116 52215	220Ω 5% 0.5W
3108	4822 051 20222	2k2 5% 0.1W (/00,/17)
3109	4822 051 20472	4k7 5% 0.1W (/00,/17)
3110	4822 116 52195	47Ω 5% 0.5W
3123	4822 051 20472	4k7 5% 0.1W (/00,/17)
3125	4822 051 20103	10k 5% 0.1W (/00,/17)
3128	4822 051 20222	2k2 5% 0.1W (/00,/17)
3132	4822 116 52195	47Ω 5% 0.5W
3134	4822 051 20224	220k 5% 0.1W
3137	4822 051 20223	22k 5% 0.1W (/00,/17)
3140	4822 051 20008	0Ω Jumper
3140	4822 117 10353	150Ω 1% 0.1W
3141	4822 051 20563	56k 5% 0.1W
3142	4822 100 11163	100k 30%LIN 0.1W
3145	4822 051 20222	2k2 5% 0.1W
3146	4822 051 20229	22Ω 5% 0.1W
3152	4822 116 52224	470Ω 5% 0.5W
3153	4822 051 20471	470Ω 5% 0.1W
3154	4822 116 52211	150Ω 5% 0.5W
3155	4822 051 20471	470Ω 5% 0.1W
3156	4822 051 20104	100k 5% 0.1W (/01)
3157	4822 116 52234	100k 5% 0.5W (/17)
3158	4822 116 52224	470Ω 5% 0.5W
3159	4822 116 52224	470Ω 5% 0.5W

ELECTRICAL PARTSLIST TUNER EC05 BOARD 7B-4

RESISTORS

3160	4822 116 52224	470Ω 5% 0.5W
3161	4822 116 52224	470Ω 5% 0.5W
3167	4822 051 20221	220Ω 5% 0.1W
3169	4822 051 20154	150k 5% 0.1W
3170	4822 116 52234	100k 5% 0.5W (not for /00)
3171	4822 116 52219	330Ω 5% 0.5W

JUMPER

4101	4822 051 20008	0Ω Jumper (/01,/14)
4102	4822 051 20008	0Ω Jumper (/01,/14)
4103	4822 051 20008	0Ω Jumper
4104	4822 051 20008	0Ω Jumper
4105	4822 051 20008	0Ω Jumper
4106	4822 051 20008	0Ω Jumper
4108	4822 051 20008	0Ω Jumper
4111	4822 051 20008	0Ω Jumper
4120	4822 051 20008	0Ω Jumper
4150	4822 051 10008	0Ω 5% 0.25W
4151	4822 051 20008	0Ω Jumper (/00,/17)
4152	4822 051 10008	0Ω 5% 0.25W
4153	4822 051 10008	0Ω 5% 0.25W
4154	4822 051 10008	0Ω 5% 0.25W
4155	4822 051 10008	0Ω 5% 0.25W (/00,/17)
4156	4822 051 20008	0Ω Jumper (/00,/17)
4157	4822 051 10008	0Ω 5% 0.25W
4158	4822 051 10008	0Ω 5% 0.25W
4159	4822 051 10008	0Ω 5% 0.25W

COILS

5102	4822 157 71634	RF-COIL MW
5103	4822 157 71635	RF-COIL LW
5122	4822 157 60517	OSC. COIL LW
5123	4822 157 60517	OSC. COIL MW
5130	4822 156 30947	RF-COIL 1.5 T
5131	4822 156 30947	RF-COIL 1.5 T

CRYSTALS/FILTERS

5109	4822 242 70665	Ceram Filter 10.7MHZ
5110	4822 242 70665	Ceram Filter 10.7MHZ
5111	4822 158 60511	AM-IF Filter 450KHZ
5112	4822 157 70302	AM-IF Filter 450KHZ
5114	4822 157 71637	AM-AFC Filter 450KHZ
5120	4822 242 82065	CER.DISCRIMINATOR
5120	4822 242 10251	CER.DISCRIMINATOR

CRYSTALS/FILTERS

5121	4822 242 10261	QUARTZ 75KHZ

DIODES

6103	4822 130 30621	1N4148
6104	4822 130 30621	1N4148
6105	4822 130 83075	HN1V02H. VARICAP.
6106	4822 130 30621	1N4148
6107	4822 130 34488	BZX79-C11
6120	4822 130 30621	1N4148
6130	4822 130 82833	1SV228
6131	4822 130 82833	1SV228

INTERGRATED CIRCUITS

7101	4822 209 90924	TEA5757H/V1.RADIO IC

TRANSISTORS

7102	4822 130 60093	2SA838B
7104	5322 130 44779	BC338-40
7105	5322 130 44779	BC338-40
7109	5322 130 41983	BC858B
7111	5322 130 42136	BC848C
7122	5322 130 42136	BC848C
7124	5322 130 42136	BC848C

TUNER ADJUSTMENT TABLE (ECO5 FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	◇1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	◇A mod=1kHz Δf=±22.5kHz	108MHz	2155	◇4	MAX
	87.5MHz (65.81MHz)		87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	◇A	98MHz	3142	◇3	152kHz ±1kHz [1]
AM IF						
MW	450kHz connect pin 26 of IC 7101 (AM Osc.) with short wire to ground (pin 4)	◇C Δf=±15kHz V_{RF} = 3mV	IC 7101 36 — 100nF — 220R	5111	◇4	max. f_o symmetric
			IC 7101 40 — 100nF — 10R see remark [2]	5112		
AM AFC **MW**		◇C continuous wave V_{RF} = 10mV		5114	◇2	0 ± 2 mV DC
AM RF [3]						
MW [4] FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	◇B Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	◇4	max. f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		1500kHz	2106		
	560kHz		560kHz	5102		

ECO5, 270896

Use service test program. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

[1] If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

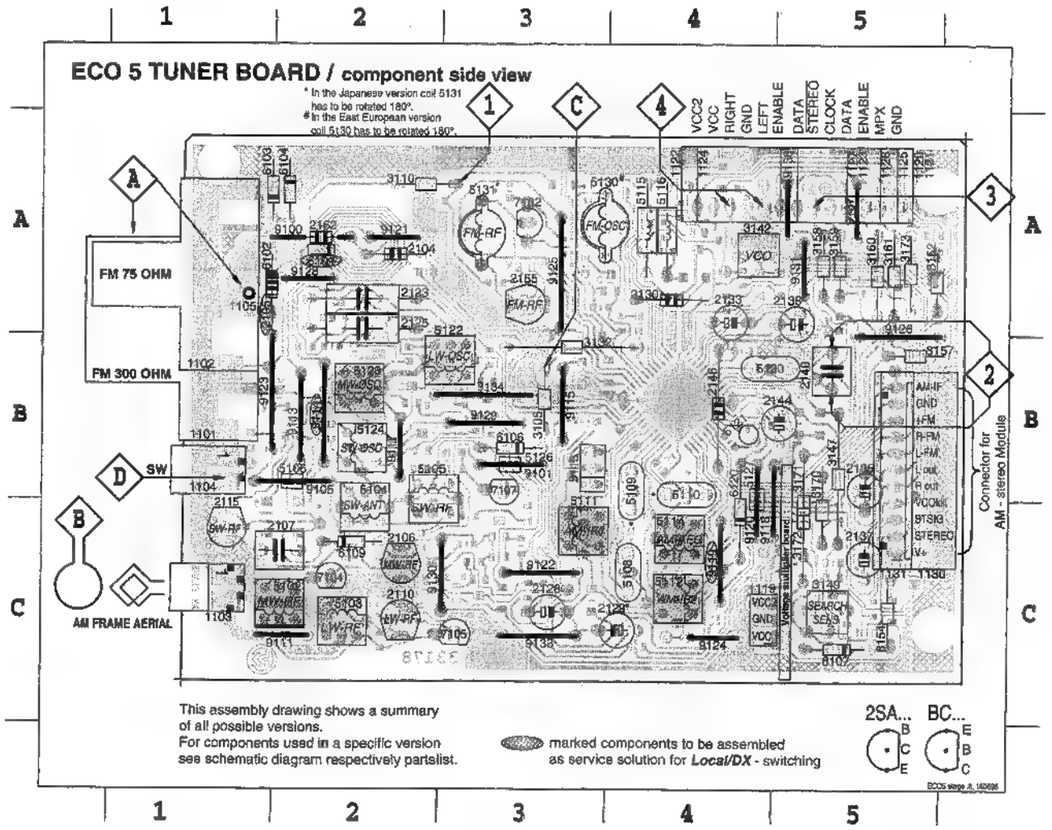
[2] RC network serves for damping the IF-filter while adjusting the other one.

[3] For AM RF adjustments the original frame antenna has to be used !

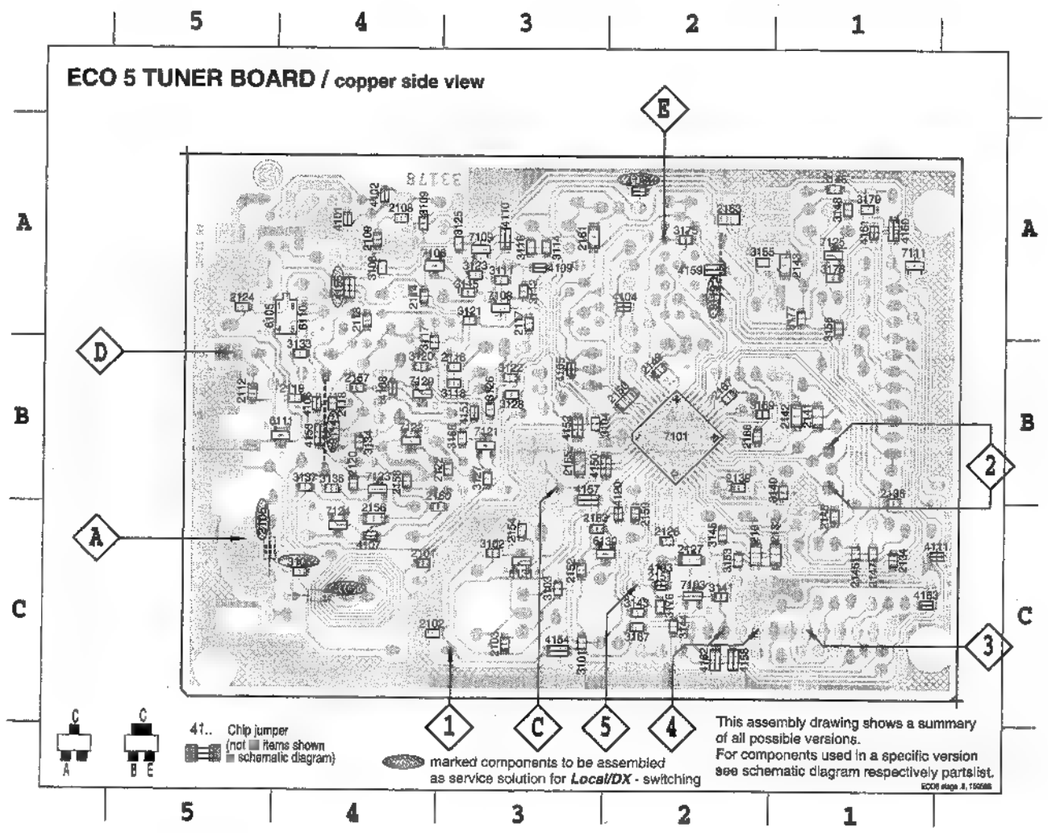
[4] MW has to be aligned before LW.

Repeat

1101	A1	2106	C2	2137	C5	3147	B5	3172	C5	5112	C4	5127	B4	7102	A3	9117	B2	9129	B3
1102	A1	2107	C2	2138	A5	3149	C5	3173	A5	5113	B3	5130	A3	7104	C2	9118	B4	9130	C3
1103	C1	2110	C2	2140	B5	3152	A5	5102	C2	5114	C4	5131	A3	7105	C3	9119	C4	9131	A5
1104	B1	2115	C1	2144	B5	3154	C5	5103	C2	5115	A4	6101	A2	7107	B3	9120	B4	9133	C3
1105	A1	2123	A2	2148	B4	3157	B5	5104	C2	5116	A4	6102	A1	9100	A2	9121	A2	9134	B3
1119	C5	2125	A2	2155	A3	3158	A5	5105	B2	5120	B4	6103	A1	9101	B3	9122	C3	9136	A5
1120	A5	2128	C3	2162	A2	3159	A5	5106	B2	5121	B4	6104	A2	9105	B2	9123	B1	9137	A5
1130	B5	2129	C4	3105	B3	3160	A5	5108	C4	5122	B3	6106	B3	9111	C2	9124	C4		
1131	B5	2130	A4	3110	A2	3161	A5	5109	B4	5123	B2	6107	C5	9113	B2	9125	A3		
2104	A2	2133	A4	3132	B3	3170	C5	5110	B4	5124	B2	6109	C2	9114	B2	9126	B5		
2105	A1	2135	B5	3142	A4	3171	C5	5111	C3	5126	B3	6120	C4	9115	B3	9128	A2		



2101	C4	2119	B4	2141	B1	2154	C3	3101	C3	3116	A3	3133	B4	3153	C2	4101	A4	4120	C2	4160	A1	7109	A3
2102	C4	2120	B4	2142	B1	2156	C4	3102	C3	3117	B4	3134	B4	3155	A2	4102	A4	4150	B2	4161	A1	7111	A1
2103	C3	2122	B3	2143	A1	2157	B4	3103	C3	3118	B3	3136	B4	3156	A1	4103	C2	4151	B3	6105	A4	7120	B4
2108	A4	2124	A5	2145	C1	2158	B4	3104	B3	3120	B4	3137	B4	3167	C2	4104	A2	4152	B3	6110	A4	7121	B3
2109	A4	2126	C2	2146	C1	2159	C2	3106	C4	3121	A3	3140	B1	3168	B3	4105	B3	4153	B4	6111	B4	7122	B4
2112	B5	2127	C2	2147	C1	2160	C4	3108	A4	3122	B3	3141	C2	3169	B2	4106	B4	5154	C3	6130	C2	7123	B4
2113	A4	2131	C2	2149	B2	2161	A3	3109	A3	3123	A3	3143	C2	3175	A2	4107	C4	4155	A4	6131	C3	7124	C4
2114	A4	2131	C1	2150	B2	2163	A2	3111	A3	3125	A3	3144	C2	3176	C2	4108	B4	4156	A2	7101	B2	7125	A1
2116	B3	2134	C1	2151	C2	2165	B3	3112	A3	3126	B3	3145	C2	3177	A1	4109	A3	4157	B3	7103	C2	4162	C2
2117	A3	2136	B1	2152	C3	2166	B2	3114	A3	3127	B3	3146	A1	3178	A1	4110	A3	4158	C2	7106	A4		
2118	B4	2139	B2	2153	C3	2167	B2	3115	A3	3128	B3	3148	A1	3179	A1	4111	C1	4159	A2	7108	A3		

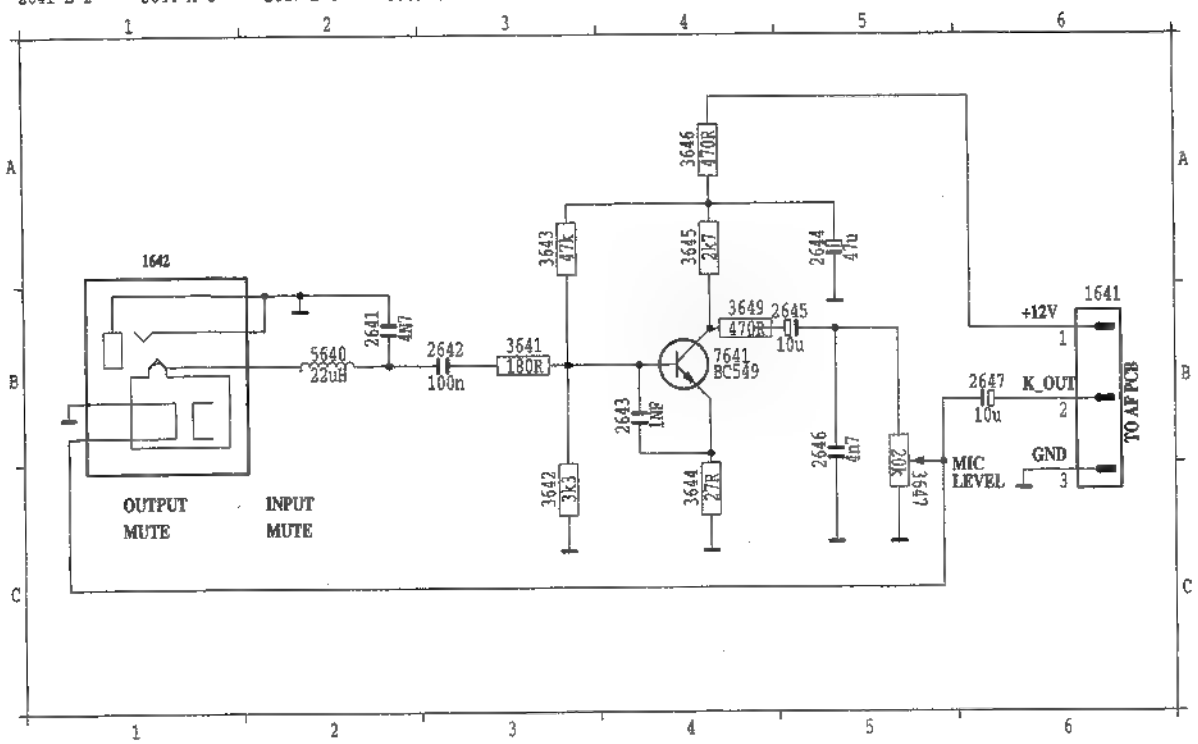


KARAOKE BOARD

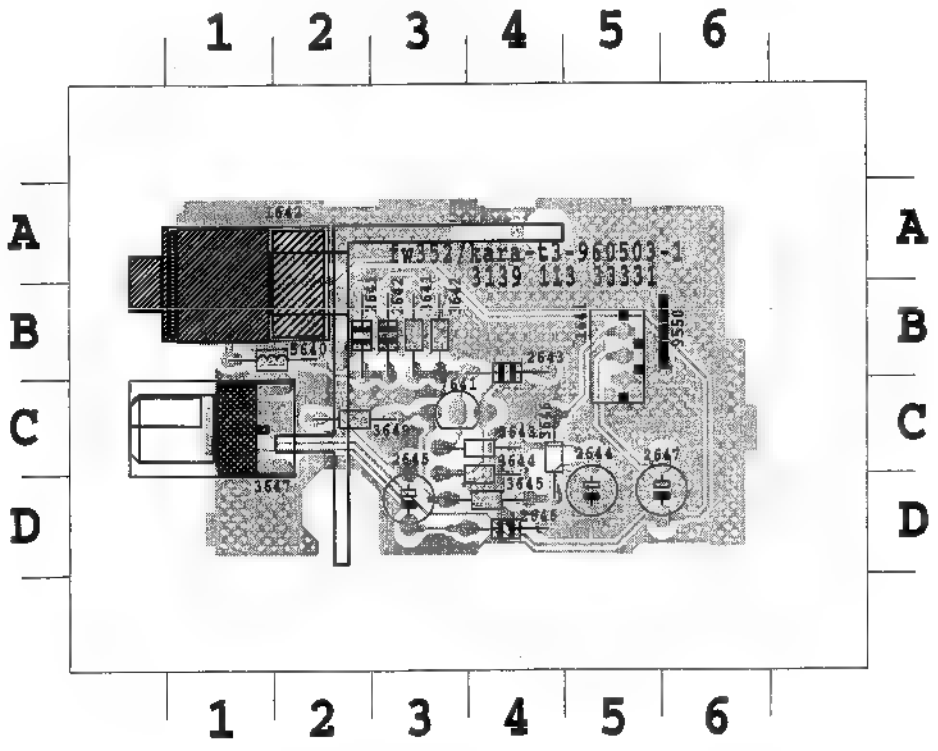
TABLE OF CONTENTS

KARAOKE CIRCUIT & LAYOUT

1641 B 6	2642 B 3	2645 B 5	3641 B 3	3644 C 4	3647 C 5	7641 B 4
1642 A 1	2643 B 4	2646 B 5	3642 C 3	3645 A 4	3649 B 4	
2641 B 2	2644 A 5	2647 B 6	3643 A 3	3646 A 4	5640 B 2	



1641 B 5	2643 B 4	2647 D 6	3644 D 4	3649 C 2
1642 B 1	2644 D 5	3641 B 3	3645 D 4	5640 B 1
2641 B 2	2645 D 3	3642 B 3	3646 C 4	7641 C 3
2642 B 3	2646 D 4	3643 C 4	3647 C 1	9550 B 6



KARAOKE BOARD PARTSLIST

MISCELLANEOUS

2	4822 402 10222	Bracket
1642	4822 267 40898	Connector

CAPACITORS

2641	4822 126 11714	4.7nF 20% 50V
2642	4822 126 12882	100nF+80-20% 50V
2643	4822 122 33197	1nF 10% 50V
2644	4822 124 41751	47µF 20% 50V
2645	4822 124 41579	10µF 20% 50V
2646	4822 126 11714	4.7nF20%"
2647	4822 124 41579	10µF 20% 50V

RESISTORS

3641	4822 116 52213	180Ω 5% 0.5W
3642	4822 116 52269	3k3 5% 0.5W
3643	4822 116 52284	47k 5% 0.5W
3644	4822 116 52188	27Ω 5% 0.5W
3645	4822 116 52263	2k7 5% 0.5W
3646	4822 116 52224	470Ω 5% 0.5W
3647	4822 101 21204	20k Variable Resistor
3648	4822 116 52175	100Ω 5% 0.5W
3649	4822 116 52224	470Ω 5% 0.5W

TRANSISTOR

7641	4822 130 44246	BC549C

COIL

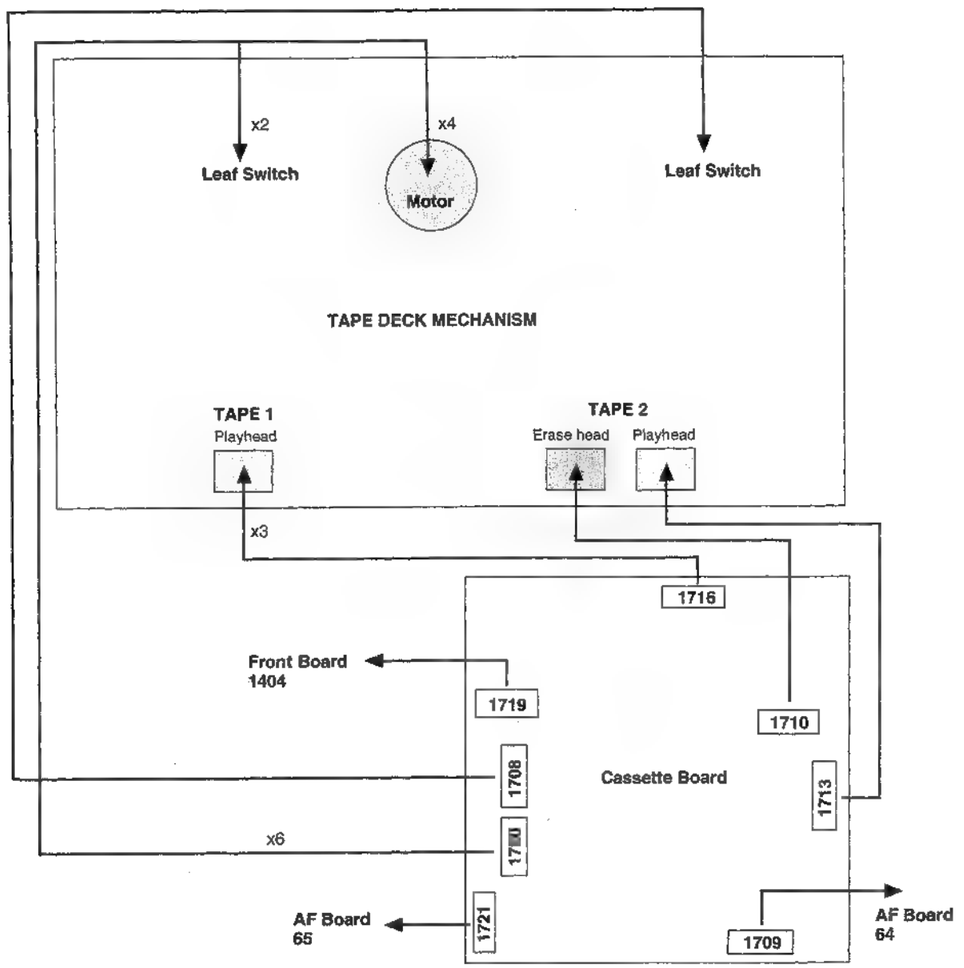
5640	4822 157 52983	Coil 22utt 10%

CASSETTE BOARD

TABLE OF CONTENTS

9 - 1

TAPE DECK WIRING DIAGRAM



TAPE MECHANISM ADJUSTMENT

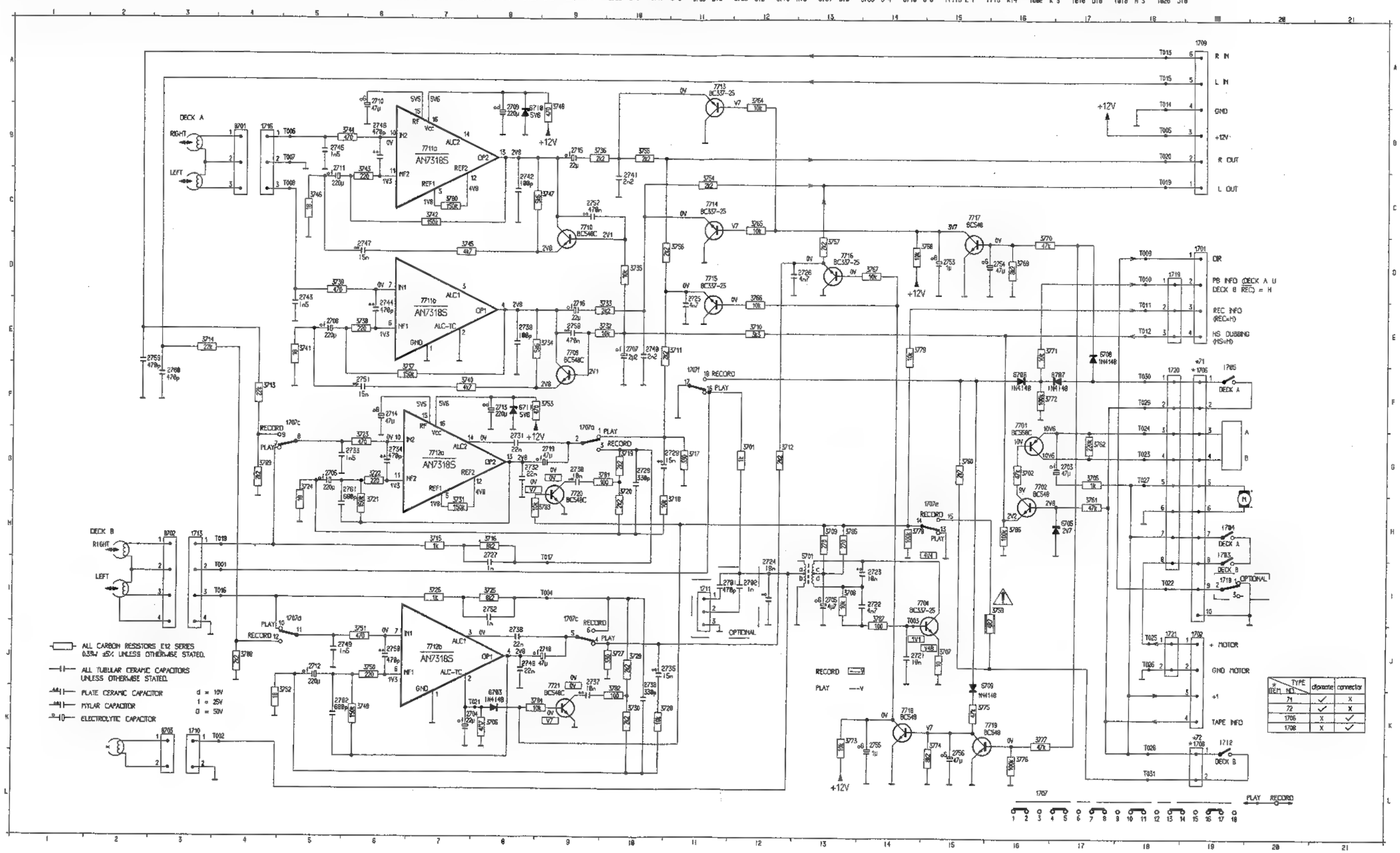
ADJUSTMENT	CASSETTE	DECK1	DECK2	MEASURE ON	READ ON	ADJUST WITH	ADJUST TO
Azimuth	10kHz SBC 420*	PLAY	-	T019/ T020	mV-meter	Left hand screw of Play or R/P head	Maximum L=R
		-	PLAY				
Motor speed	3150Hz SBC420*	PLAY	-	T019/ T020	Wow and Flutter meter	Preset in motor	**a
		-	PLAY				

* SBC 420 : 4822 397 30071

**a : The maximum permissible speed deviation is 2%.
More over, the Wow & Flutter value can be read.
This value should not exceed 0.4%.

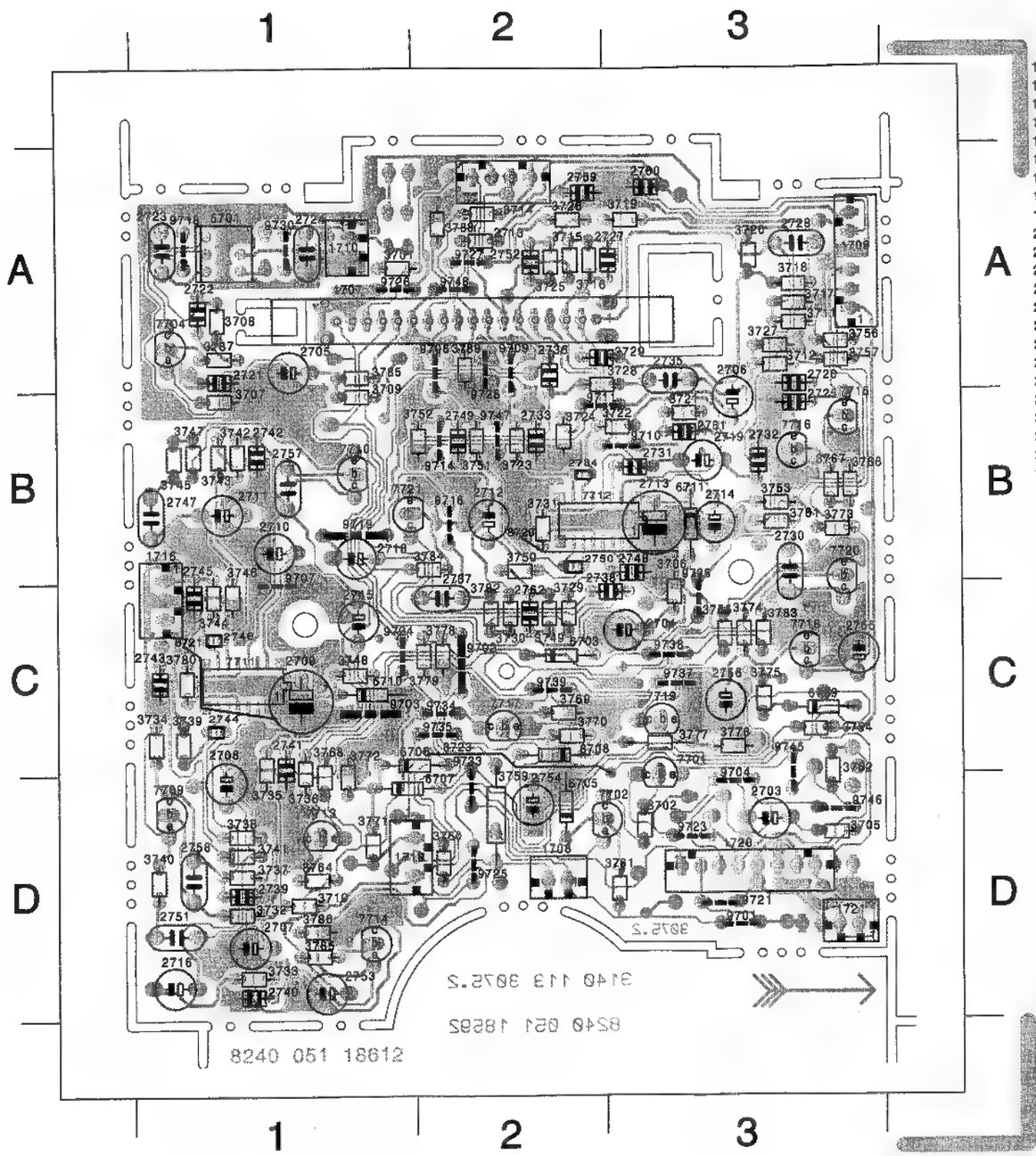
CASSETTE BOARD

9 - 2



9 - 3

CASSETTE LAYOUT-Component side view



1707 A 2	2752 A 2	3748 C 1	7713 D 1
1708 D 2	2753 D 1	3749 C 2	7714 D 1
1709 A 3	2754 D 2	3750 B 2	7715 B 3
1710 A 1	2755 C 3	3751 B 2	7716 B 3
1713 A 2	2756 C 3	3752 B 2	7717 C 2
1716 C 1	2757 B 1	3753 B 3	7718 C 3
1719 D 1	2758 D 1	3754 C 3	7719 C 3
1720 D 3	2759 A 2	3755 C 3	7720 B 3
1721 D 3	2760 A 3	3756 A 3	7721 B 1
2703 D 3	2761 B 3	3757 A 3	9701 D 3
2704 C 3	2762 C 2	3759 D 2	9702 C 2
2705 A 1	3701 A 1	3760 D 2	9703 C 1
2706 B 3	3702 D 3	3761 D 3	9704 D 3
2707 D 1	3705 D 3	3762 C 3	9706 A 2
2708 D 1	3706 C 3	3764 D 1	9707 C 1
2709 C 1	3707 B 1	3765 D 1	9709 A 2
2710 B 1	3708 A 1	3766 B 3	9710 B 3
2711 B 1	3709 B 1	3767 B 3	9711 B 2
2712 B 2	3710 D 1	3768 D 1	9714 B 2
2713 B 3	3711 A 3	3769 C 2	9716 B 2
2714 B 3	3712 A 3	3770 C 2	9718 A 1
2715 C 1	3713 A 2	3771 D 1	9719 B 1
2716 D 1	3714 A 2	3772 D 1	9721 D 3
2718 B 1	3715 A 2	3773 B 3	9723 D 3
2719 B 3	3716 A 2	3774 C 3	9724 C 1
2721 A 1	3717 A 3	3775 C 3	9725 D 2
2722 A 1	3718 A 3	3776 C 3	9726 A 1
2723 A 1	3719 A 3	3777 C 3	9727 A 2
2724 A 1	3720 A 3	3778 C 2	9728 A 2
2725 B 3	3721 B 3	3779 C 2	9730 A 1
2726 A 3	3722 B 3	3780 C 1	9733 D 2
2727 A 3	3723 B 2	3781 B 3	9734 C 2
2728 A 3	3724 B 2	3782 C 2	9735 C 2
2729 A 2	3725 A 2	3783 C 3	9736 C 3
2730 B 3	3726 A 2	3784 B 2	9737 C 3
2731 B 3	3727 A 3	3785 A 1	9738 C 3
2732 B 3	3728 A 2	3786 D 1	9739 C 2
2733 B 2	3729 C 2	3787 A 1	9745 D 3
2734 B 2	3730 C 2	3788 A 2	9746 D 3
2735 A 3	3731 B 2	3789 A 2	9747 B 2
2736 A 2	3732 D 1	5701 A 1	9748 A 2
2737 C 2	3733 D 1	6703 C 2	8720 B 2
2738 C 3	3734 C 1	6705 D 2	8721 C 1
2739 D 1	3735 C 1	6706 C 1	8723 C 2
2740 D 1	3736 C 1	6707 D 1	
2741 C 1	3737 D 1	6708 C 2	
2742 B 1	3738 D 1	6709 C 3	
2743 C 1	3739 C 1	6710 C 1	
2744 C 1	3740 D 1	6711 B 3	
2745 C 1	3741 D 1	7701 D 3	
2746 C 1	3742 B 1	7702 D 2	
2747 B 1	3743 B 1	7704 A 1	
2748 B 3	3744 C 1	7709 D 1	
2749 B 2	3745 B 1	7710 B 1	
2750 B 2	3746 C 1	7711 C 1	
2751 D 1	3747 B 1	7712 B 2	

CAPACITORS

2703	4822 124 41397	47µF 20% 25V
2704	4822 124 41596	22µF 20% 50V
2705	4822 124 40246	4.7µF 20% 63V
2706	4822 124 40181	22µF 20% 10V
2707	4822 124 41576	2.2µF 20% 50V
2708	4822 124 40181	220µF 20% 10V
2709	4822 124 80144	220µF 20% 25V
2710	4822 124 41397	47µF 20% 25V
2711	4822 124 40181	220µF 20% 10V
2712	4822 124 40181	220µF 20% 10V
2713	4822 124 80144	220µF 20% 25V
2714	4822 124 41397	47µF 20% 25V
2715	4822 124 41596	22µF 20% 50V
2716	4822 124 41596	22µF 20% 50V
2718	4822 124 41397	47µF 20% 25V
2719	4822 124 41397	47µF 20% 25V
2721	4822 121 51387	10nF 20% 16V
2722	4822 126 11714	4.7nF 20% 50V
2723	4822 121 51304	10nF 10% 50V
2724	4822 121 51306	18nF 10% 50V
2725	4822 126 11714	4.7nF 20%
2726	4822 126 11714	4.7nF 20%
2727	4822 122 33197	1nF 10% 50V
2728	4822 121 51305	15nF 10% 50V
2729	4822 126 12787	330pF 10% 50V
2730	4822 121 51304	10nF 10% 50V
2731	4822 126 11585	22nF +80-20% 25V
2732	4822 126 11585	22nF +80-20% 25V
2733	4822 126 12878	1.5nF 10% 16V
2734	5322 122 32311	470pF 10% 100V
2735	4822 121 51305	15nF 10% 50V
2736	4822 126 12787	330pF 10% 50V
2737	4822 121 51304	10nF 10% 50V
2738	4822 126 11585	22nF +80-20% 25V
2739	4822 122 33195	100pF 10% 50V
2740	4822 126 12339	2.2nF 20%
2741	4822 126 12339	2.2nF 20%
2742	4822 122 33195	100pF 10% 50V
2743	4822 126 12878	1.5nF 10% 16V
2744	5322 122 32311	470pF 10% 100V
2745	4822 126 12878	1.5nF 10% 16V
2746	5322 122 32311	470pF 10% 100V
2747	4822 121 51305	15nF 10% 50V
2748	4822 126 11585	22nF +80-20% 25V
2749	4822 126 12878	1.5nF 10% 16V

CAPACITORS

2750	5322 122 32311	470pF 10% 100V
2751	4822 121 51305	15nF 10% 50V
2752	4822 122 33197	1nF 10% 50V
2753	4822 124 40242	1µF 20% 63V
2754	4822 124 41397	47µF 20% 25V
2756	4822 124 41397	47µF 20% 25V
2755	4822 124 40242	1µF 20% 63V
2757	4822 121 51252	470nF 5% 63V
2758	4822 121 51252	470nF 5% 63V
2759	4822 122 33519	470pF 10% 50V
2760	4822 122 33519	470pF 10% 50V
2761	4822 122 33169	680pF 10% 50V
2762	4822 122 33169	680pF 10% 50V

RESISTORS

3701	4822 116 83863	1k 5% 0.5W
3702	4822 116 52284	47k 5% 0.5W
3705	4822 116 83863	1k 5% 0.5W
3706	4822 111 30893	4M7 5% 0.2W
3707	4822 116 52176	10Ω 5% 0.5W
3708	4822 116 83864	10k 5% 0.5W
3709	4822 116 52217	270Ω 5% 0.5W
3710	4822 116 52269	3k3 5% 0.5W
3711	4822 116 52256	2k2 5% 0.5W
3712	4822 116 52256	2k2 5% 0.5W
3713	4822 116 52257	22k 5% 0.5W
3714	4822 116 52257	22k 5% 0.5W
3715	4822 116 83863	1k 5% 0.5W
3716	4822 116 52303	8k2 5% 0.5W
3713	4822 116 52257	22k 5% 0.5W
3714	4822 116 52257	22k 5% 0.5W
3717	4822 116 52219	330Ω 5% 0.5W
3718	4822 116 83864	10k 5% 0.5W
3719	4822 116 52256	2k2 5% 0.5W
3720	4822 116 52256	2k2 5% 0.5W
3721	4822 116 52245	150k 5% 0.5W
3722	4822 116 52215	220Ω 5% 0.5W
3723	4822 116 52224	470Ω 5% 0.5W
3724	4822 116 52184	18Ω 5% 0.5W
3725	4822 116 52303	8k2 5% 0.5W
3726	4822 116 83863	1k 5% 0.5W
3727	4822 116 52219	330Ω 5% 0.5W
3728	4822 116 83864	10k 5% 0.5W
3729	4822 116 52256	2k2 5% 0.5W
3730	4822 116 52256	2k2 5% 0.5W
3731	4822 116 52245	150k 5% 0.5W

9 - 4
ELECTRICAL PARTSLIST CASSETTE BOARD

RESISTORS

3732	4822 116 83864	10k 5% 0.5W
3733	4822 116 52256	2k2 5% 0.5W
3734	4822 116 52289	5k6 5% 0.5W
3735	4822 116 83864	10k 5% 0.5W
3736	4822 116 52256	2k2 5% 0.5W
3737	4822 116 52245	150k 5% 0.5W
3738	4822 116 52215	220Ω 5% 0.5W
3739	4822 116 52224	470Ω 5% 0.5W
3740	4822 116 52283	4k7 5% 0.5W
3741	4822 116 52184	18Ω 5% 0.5W
3742	4822 116 52245	150k 5% 0.5W
3743	4822 116 52215	220Ω 5% 0.5W
3744	4822 116 52224	470Ω 5% 0.5W
3745	4822 116 52283	4k7 5% 0.5W
3746	4822 116 52184	18Ω 5% 0.5W
3747	4822 116 52289	5k6 5% 0.5W
3748	4822 116 52224	470Ω 5% 0.5W
3749	4822 116 52245	150k 5% 0.5W
3750	4822 116 52215	220Ω 5% 0.5W
3751	4822 116 52224	470Ω 5% 0.5W
3752	4822 116 52184	18Ω 5% 0.5W
3753	4822 116 52224	470Ω 5% 0.5W
3754	4822 116 52256	2k2 5% 0.5W
3755	4822 116 52256	2k2 5% 0.5W
3756	4822 116 52256	2k2 5% 0.5W
3757	4822 116 52256	2k2 5% 0.5W
3759	4822 052 10478	4Ω7 5% 0.33W
3760	4822 116 52263	2k7 5% 0.5W
3761	4822 116 52284	47k 5% 0.5W
3764	4822 116 83864	10k 5% 0.5W
3762	4822 116 83874	220k 5% 0.5W
3765	4822 116 83864	10k 5% 0.5W
3766	4822 116 83864	10k 5% 0.5W
3767	4822 116 83864	10k 5% 0.5W
3768	4822 116 83864	10k 5% 0.5W
3769	4822 116 52303	8k2 5% 0.5W
3770	4822 116 52284	47k 5% 0.5W
3771	4822 116 83864	10k 5% 0.5W
3772	4822 116 52234	100k 5% 0.5W
3773	4822 116 83864	10k 5% 0.5W
3774	4822 116 52303	8k2 5% 0.5W
3775	4822 116 52284	47k 5% 0.5W
3776	4822 116 52234	100k 5% 0.5W
3777	4822 116 52284	47k 5% 0.5W
3778	4822 116 52234	100k 5% 0.5W

RESISTORS

3779	4822 116 83864	10k 5% 0.5W
3780	4822 116 52245	150k 5% 0.5W
3781	4822 116 52175	100Ω 5% 0.5W
3782	4822 116 52175	100Ω 5% 0.5W
3783	4822 116 83864	10k 5% 0.5W
3784	4822 116 83864	10k 5% 0.5W
3785	4822 116 52217	270Ω 5% 0.5W
3786	4822 116 52234	100k 5% 0.5W
3787	4822 116 52175	100Ω 5% 0.5W
3788	4822 116 52256	2k2 5% 0.5W
3789	4822 116 52256	2k2 5% 0.5W

COIL

5701	4822 157 10371	100KHZ OSC COIL

DIODES

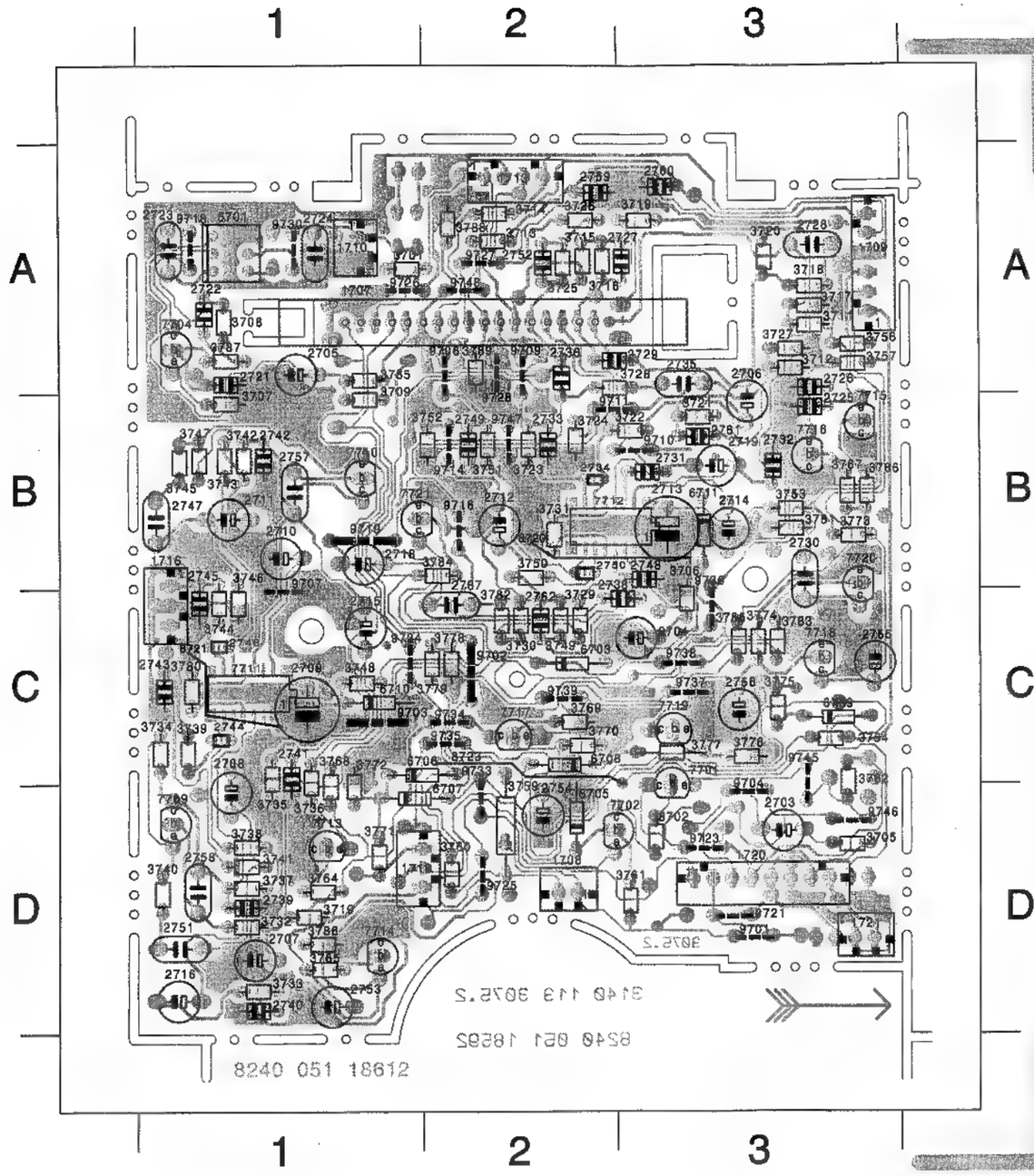
6703	4822 130 30621	1N4148
6705	5322 130 34563	BZX79-C2V7
6706	4822 130 30621	1N4148
6707	4822 130 30621	1N4148
6708	4822 130 30621	1N4148
6709	4822 130 30621	1N4148
6710	4822 130 34173	BZX79-C5V6
6711	4822 130 34173	BZX79-C5V6

TRANSISTORS

7701	5322 130 60068	BC558C
7702	4822 130 40938	BC548
7704	4822 130 40981	BC337-25
7709	4822 130 44196	BC548C
7710	4822 130 44196	BC548C
7711	4822 209 32918	AN7318S
7712	4822 209 32918	AN7318S
7713	4822 130 40981	BC337-25
7714	4822 130 40981	BC337-25
7715	4822 130 40981	BC337-25
7716	4822 130 40981	BC337-25
7717	4822 130 40938	BC548
7718	4822 130 40938	BC548
7719	4822 130 40938	BC548
7720	4822 130 44196	BC548C
7721	4822 130 44196	BC548C

9 - 3

CASSETTE LAYOUT-Component side view

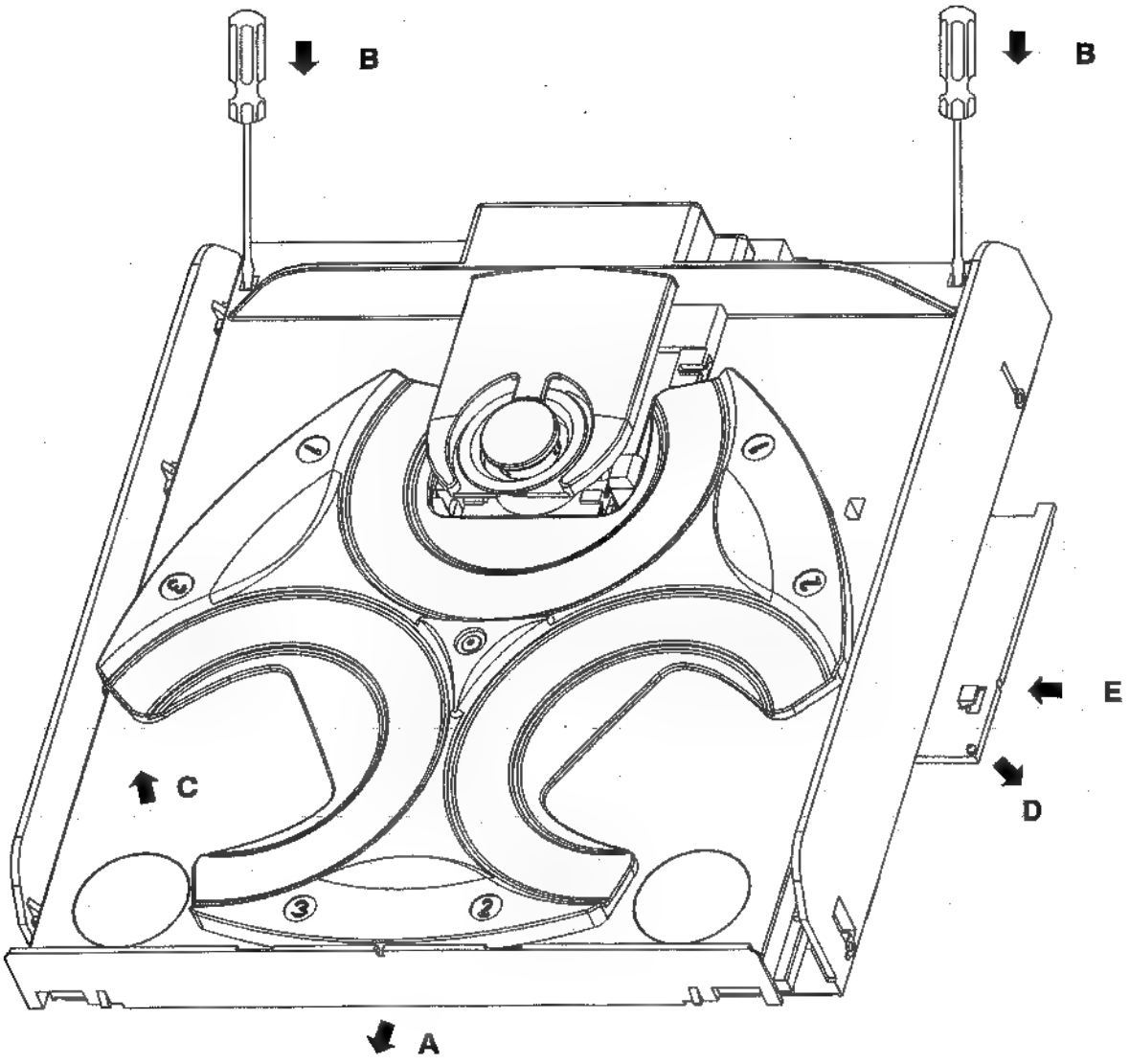


1707	A 2	2752	A 2	3748	C 1	7713	D 1
1708	D 2	2753	D 1	3749	C 2	7714	D 1
1709	A 3	2754	D 2	3750	B 2	7715	B 3
1710	A 1	2755	C 3	3751	B 2	7716	B 3
1713	A 2	2756	C 3	3752	B 2	7717	C 2
1716	C 1	2757	B 1	3753	B 3	7718	C 3
1719	D 1	2758	D 1	3754	C 3	7719	C 3
1720	D 3	2759	A 2	3755	C 3	7720	B 3
1721	D 3	2760	A 3	3756	A 3	7721	B 1
2703	D 3	2761	B 3	3757	A 3	9701	D 3
2704	C 3	2762	C 2	3759	D 2	9702	C 2
2705	A 1	3701	A 1	3760	D 2	9703	C 1
2706	B 3	3702	D 3	3761	D 3	9704	D 3
2707	D 1	3705	D 3	3762	C 3	9706	A 2
2708	D 1	3706	C 3	3764	D 1	9707	C 1
2709	C 1	3707	B 1	3765	D 1	9709	A 2
2710	B 1	3708	A 1	3766	B 3	9710	B 3
2711	B 1	3709	B 1	3767	B 3	9711	B 2
2712	B 2	3710	D 1	3768	D 1	9714	B 2
2713	B 3	3711	A 3	3769	C 2	9716	B 2
2714	B 3	3712	A 3	3770	C 2	9718	A 1
2715	C 1	3713	A 2	3771	D 1	9719	B 1
2716	D 1	3714	A 2	3772	D 1	9721	D 3
2718	B 1	3715	A 2	3773	B 3	9723	D 3
2719	B 3	3716	A 2	3774	C 3	9724	C 1
2721	A 1	3717	A 3	3775	C 3	9725	D 2
2722	A 1	3718	A 3	3776	C 3	9726	A 1
2723	A 1	3719	A 3	3777	C 3	9727	A 2
2724	A 1	3720	A 3	3778	C 2	9728	A 2
2725	B 3	3721	B 3	3779	C 2	9730	A 1
2726	A 3	3722	B 3	3780	C 1	9733	D 2
2727	A 3	3723	B 2	3781	B 3	9734	C 2
2728	A 3	3724	B 2	3782	C 2	9735	C 2
2729	A 2	3725	A 2	3783	C 3	9736	C 3
2730	B 3	3726	A 2	3784	B 2	9737	C 3
2731	B 3	3727	A 3	3785	A 1	9738	C 3
2732	B 3	3728	A 2	3786	D 1	9739	C 2
2733	B 2	3729	C 2	3787	A 1	9745	D 3
2734	B 2	3730	C 2	3788	A 2	9746	D 3
2735	A 3	3731	B 2	3789	A 2	9747	B 2
2736	A 2	3732	D 1	5701	A 1	9748	A 2
2737	C 2	3733	D 1	6703	C 2	8720	B 2
2738	C 3	3734	C 1	6705	D 2	8721	C 1
2739	D 1	3735	C 1	6706	C 1	8723	C 2
2740	D 1	3736	C 1	6707	D 1		
2741	C 1	3737	D 1	6708	C 2		
2742	B 1	3738	D 1	6709	C 3		
2743	C 1	3739	C 1	6710	C 1		
2744	C 1	3740	D 1	6711	B 3		
2745	C 1	3741	D 1	7701	D 3		
2746	C 1	3742	B 1	7702	D 2		
2747	B 1	3743	B 1	7704	A 1		
2748	B 3	3744	C 1	7709	D 1		
2749	B 2	3745	B 1	7710	B 1		
2750	B 2	3746	C 1	7711	C 1		
2751	D 1	3747	B 1	7712	B 2		

CDC3 MODULE BOARD

TABLE OF CONTENTS

DEMOUNTING HINTS



DEMOUNTING OF DRAWER

⇒ **A** Pull drawer outwards
⇒ **B** Unlock drawer with srcrewdriver
⇒ **C** Lift drawer to demount from chassis

DEMOUNTING OF FLEX PLATE

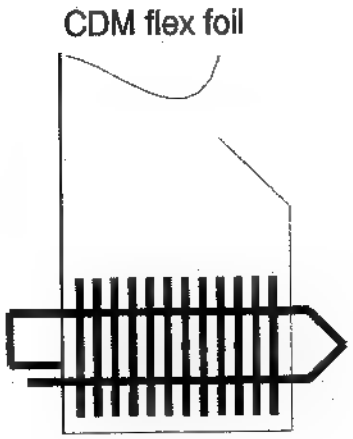
⇒ **D** Lift plate to unlock pin from bottom plate
⇒ **E** Move plate inwards to demount from bottom plate

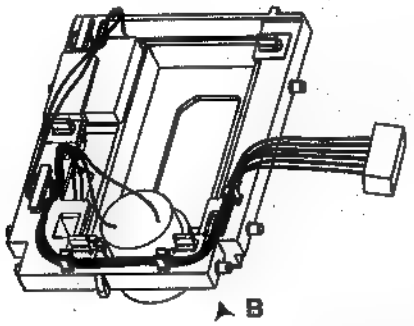
SERVICING HINTS

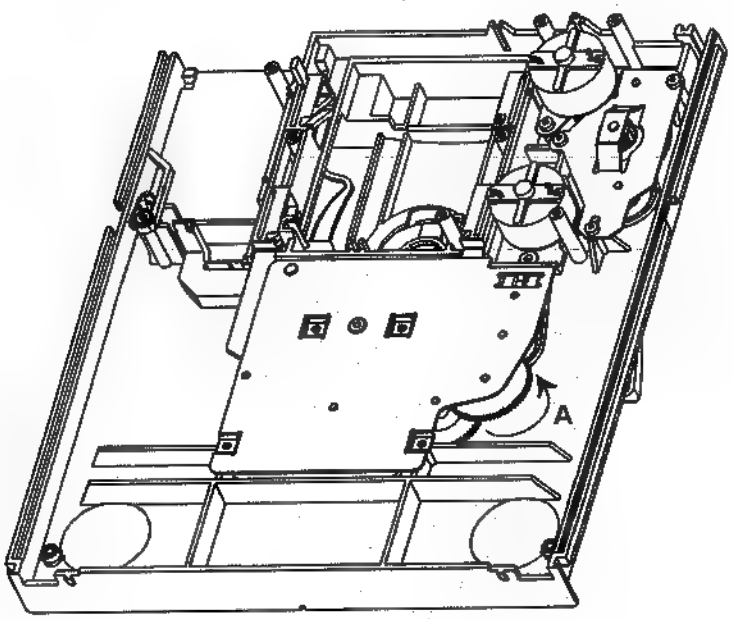
REPLACEMENT OF CDM-12.1

See also exploded view of changer mechanism.

1. Demount flex plate (140).
2. Demount printboard: remove 6 screws and desolder lips of tray motor and carrousel motor.
3. Disconnect flexfoil and JST connector of CDM from PCB. Put paperclip on flexfoil to protect CDM against laser damage.
4. Remove 2 screws 107 and 108 and demount CDM lockings 105 and 106.
5. Turn gearwheel 42 of disc-change-mechanism by finger to move CDM-support in upper position(position of carrousel between 2 discs during changing). **A**
6. Demount CDM-support 95. **B**
7. Replace CDM 100. The wire tree of JST connector has to be desoldered and resoldered on the new CDM.







MOUNTING OF CARROUSEL

1. Turn gearwheel 42 of disc change mechanism by finger until CDM is in play position.
2. Mount carrousel 115 so that disc is positioned right on the turntable. Carrousel positionnumber doesn't matter.

CD SERVO SERVICE HINTS

CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CDM-ELECTRONICS WHEN CONNECTION A NEW CDM MECHANISM. THAT'S WHY, BESIDES THE SAFETY MEASURES LIKE
- SWITSH OFF POWER SUPPLY
- ESD PROTECTION
ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

The following steps have to be done when replacing the CDM mechanism:
1. Disconnect old CDM flexfoil from printed board
2. Connect paperclip to CDM flexfoil to short-circuit flexfoil (fig. 1)
3. Short-circuit printed board with **brass-sheet (4822 321 11197)** plugged into the flexfoil connector (fig. 2)
4. Remove old CDM mechanism
5. Position new CDM mechanism in its studs
6. Remove short-circuit from printed board connector
7. Remove short-circuit from flexfoil of new CDM
8. Connect new flexfoil to print connector (fig. 3)

fig. 1

fig2

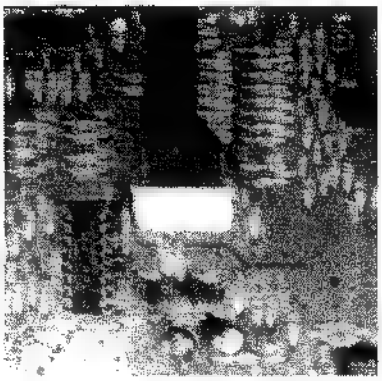
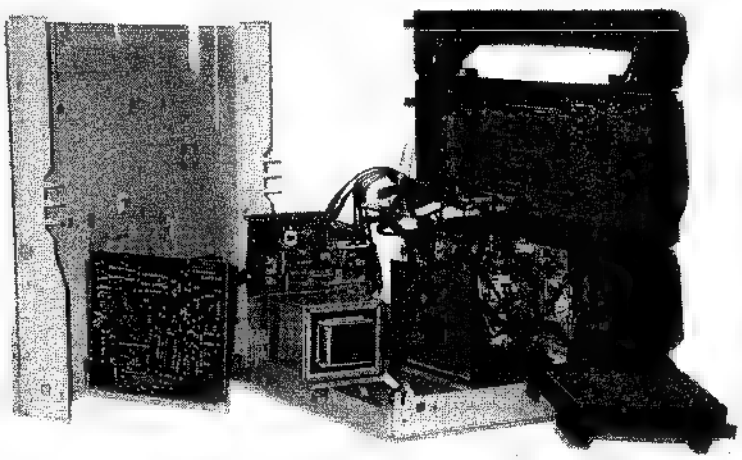
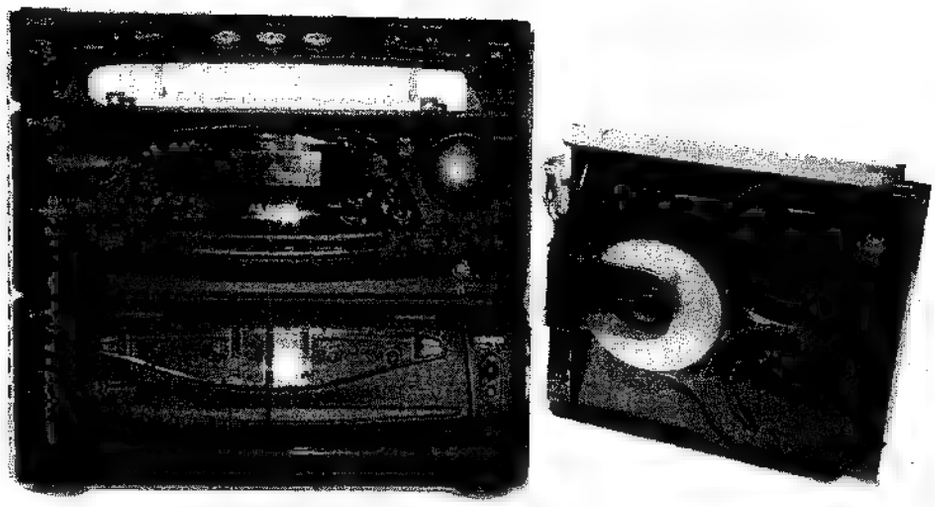


fig. 3

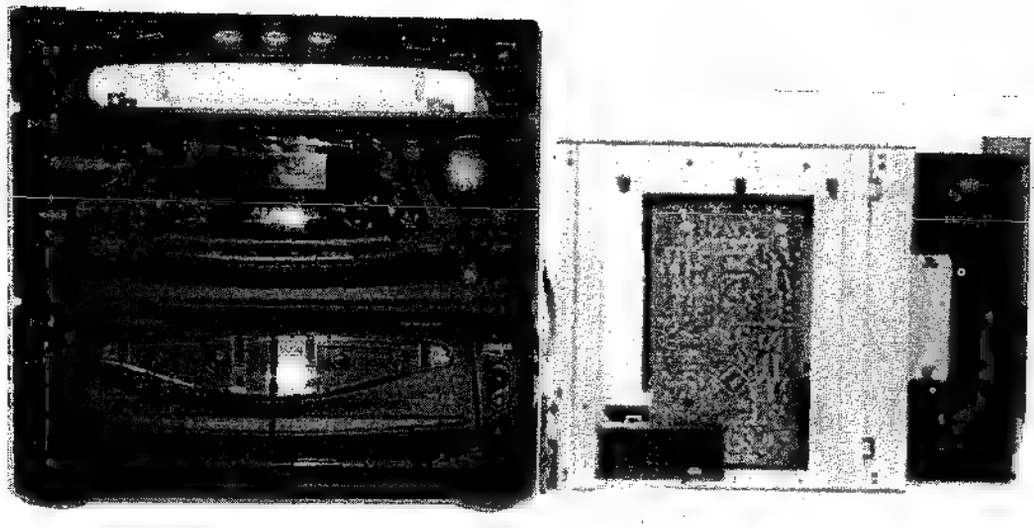
Service Position for CDC module



1) Follow the dismantling sequence shown in page 3-3 before coming to service position A.



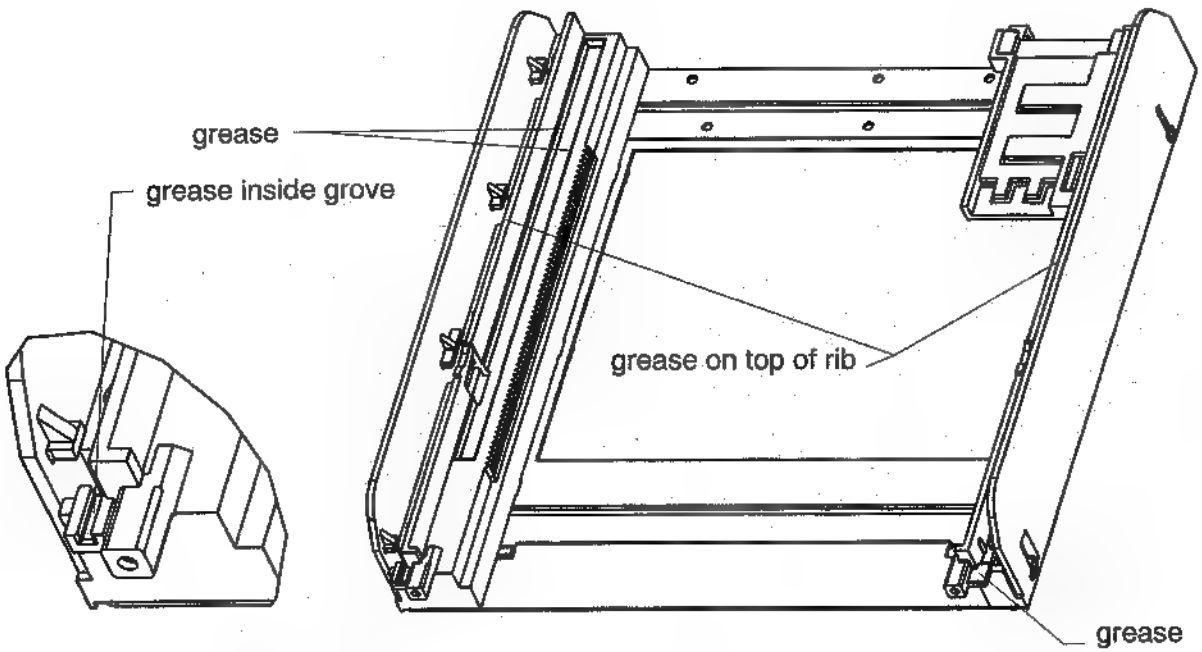
2) Service position B



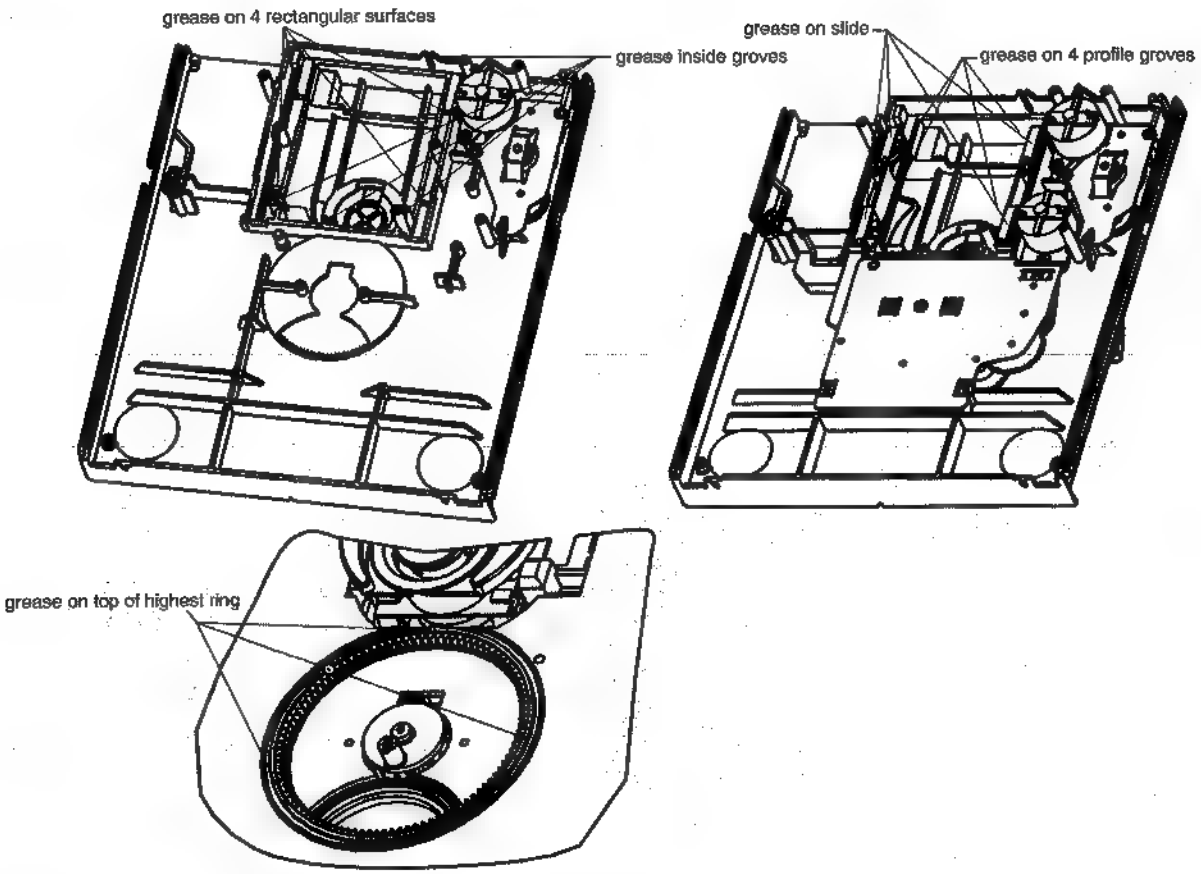
3) Service position C

LUBRICATING INSTRUCTIONS

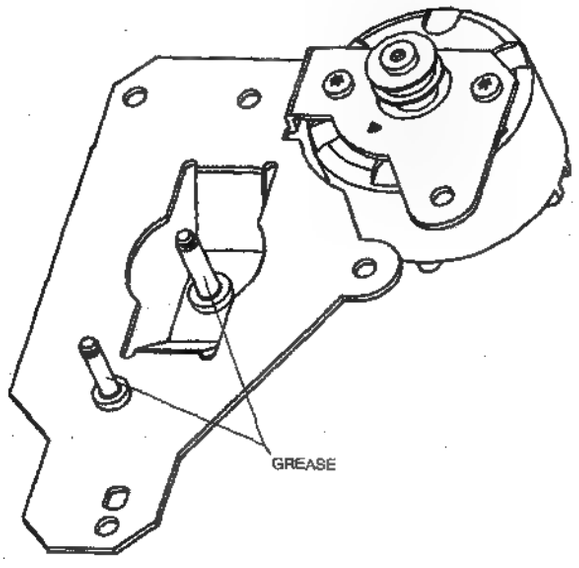
CHASSIS



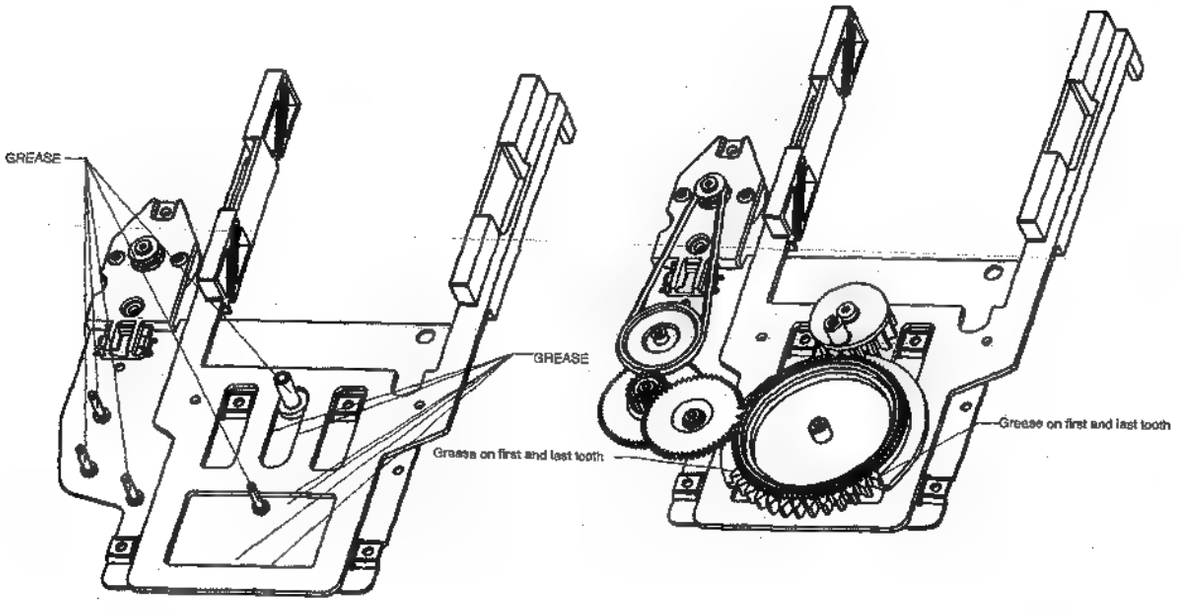
DRAWER



DRAWER MECHANISM

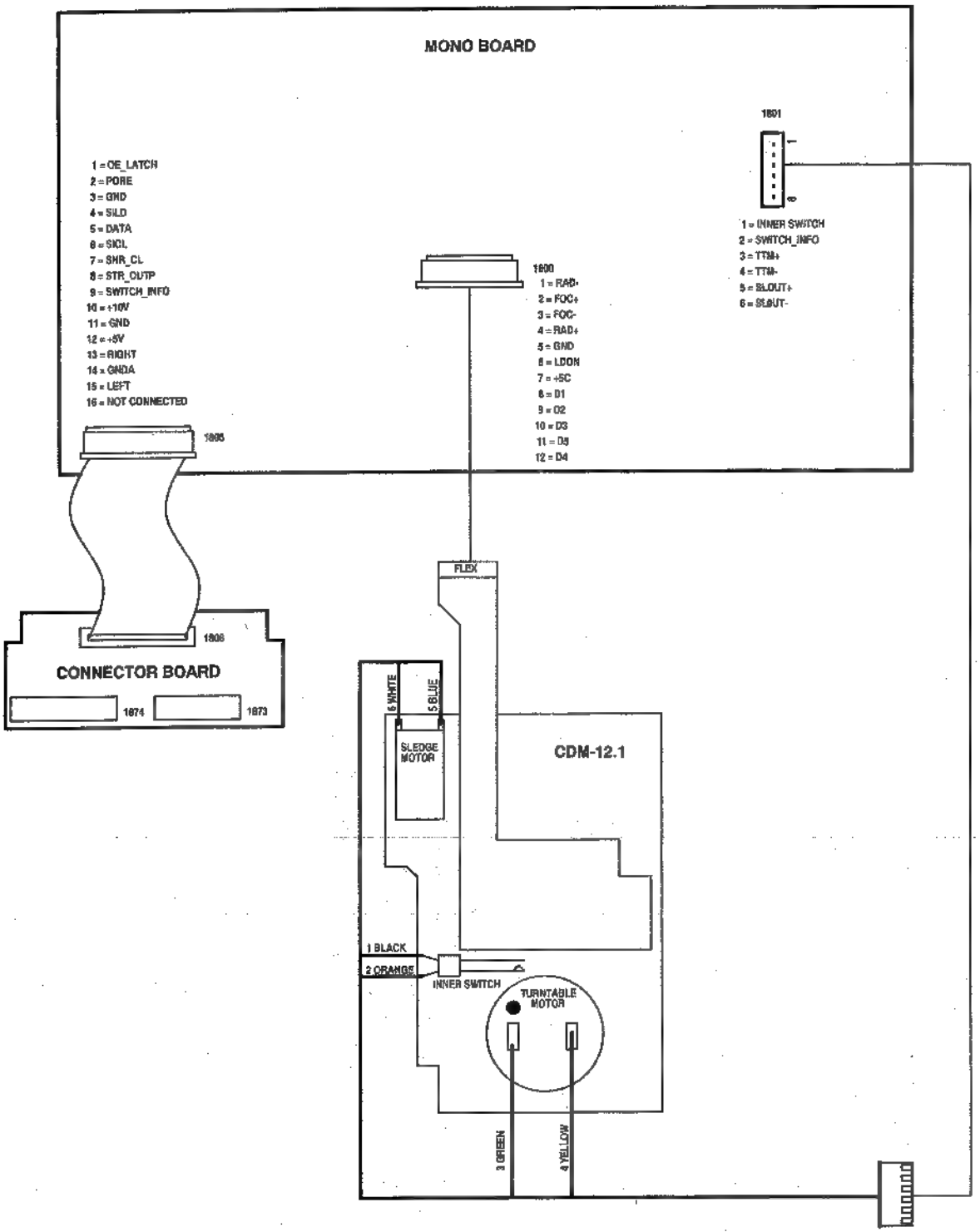


DISC-CHANGE MECHANISM



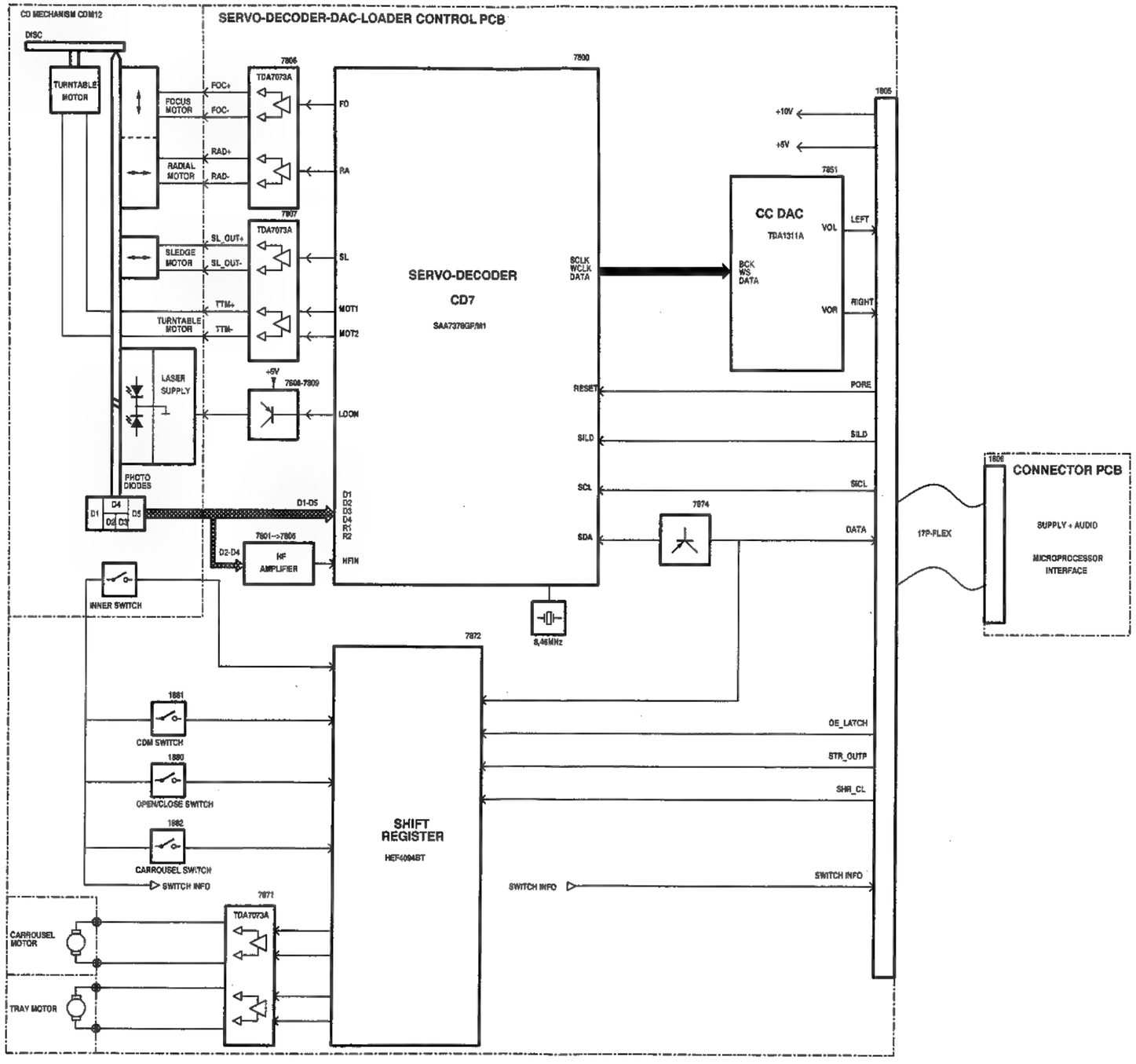
Use only grease **Polylub GLY 801** service codenumber 4822 390 10136

WIRING DIAGRAM

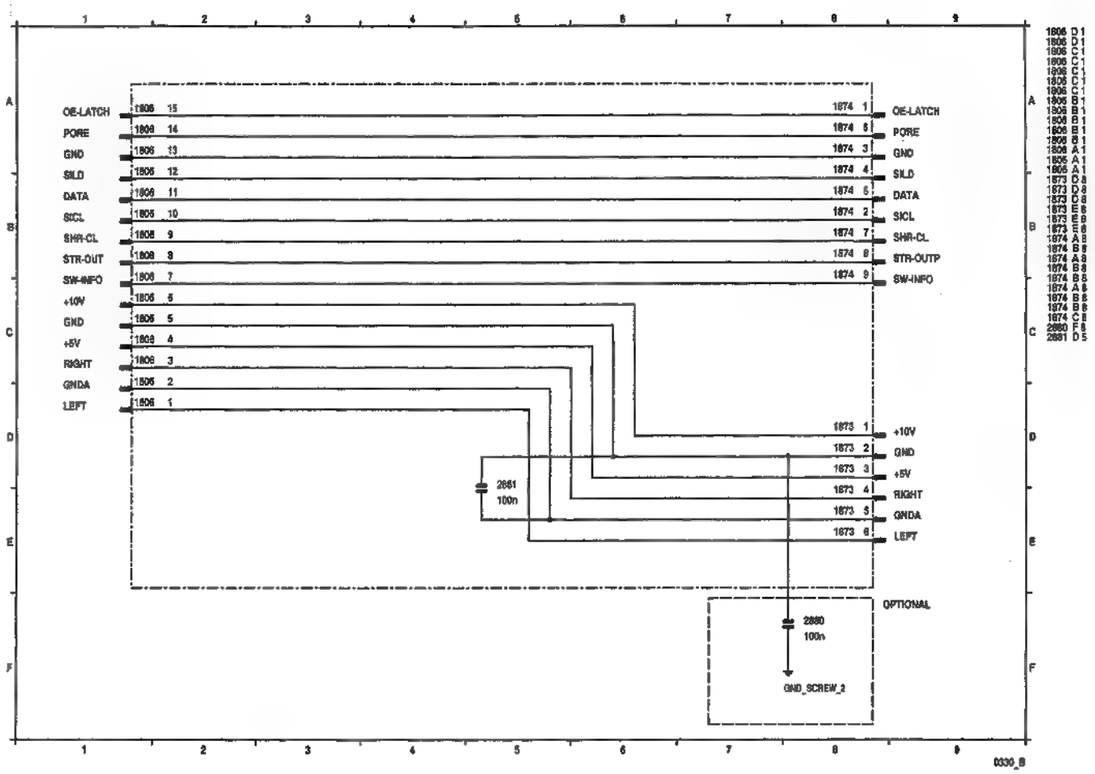


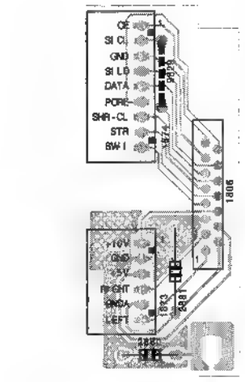
10 - 9

BLOCK DIAGRAM



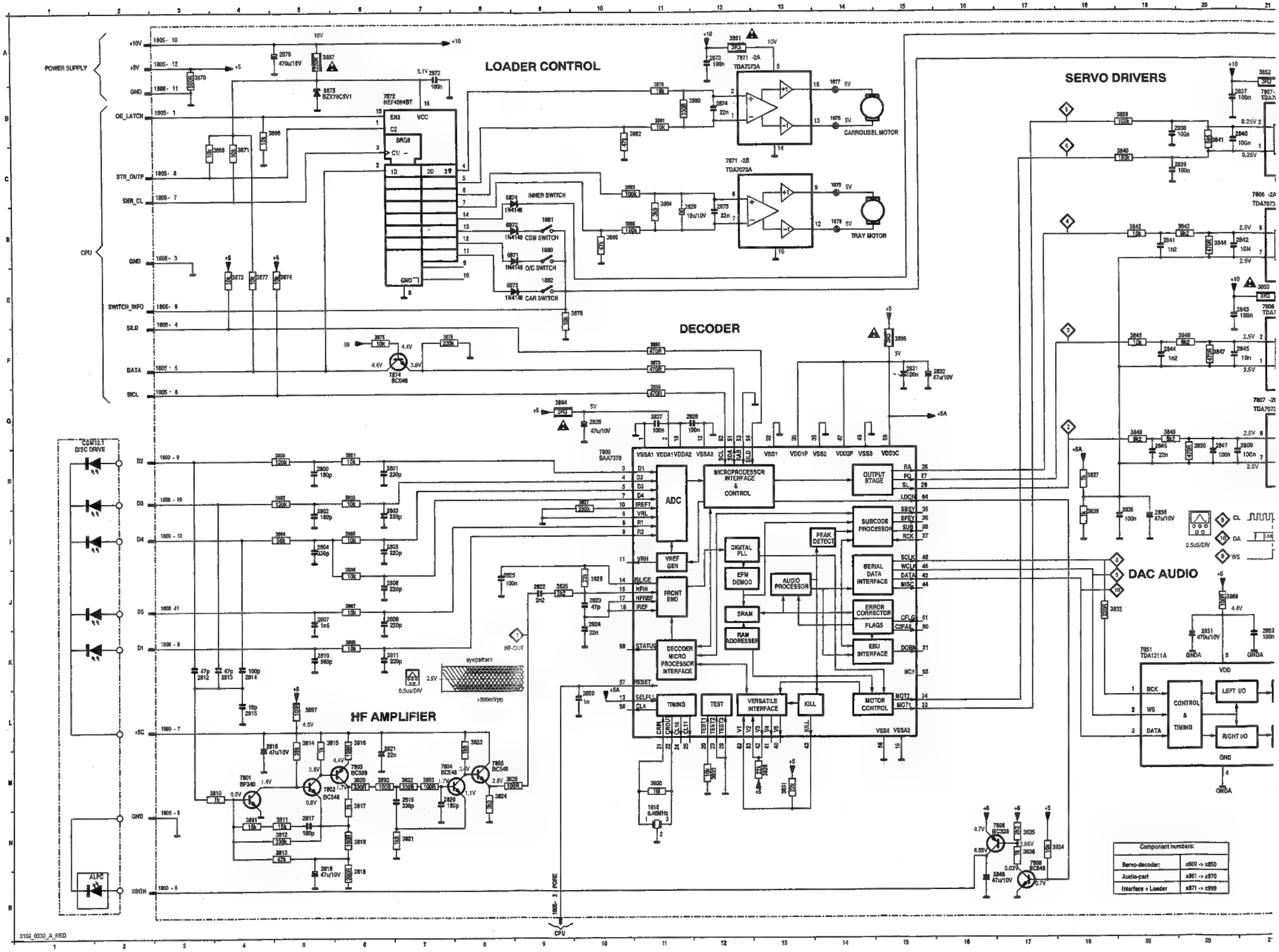
CONNECTOR WIRING AND LAYOUT





10 - 10

CDC CIRCUIT



10 - 10

LOADER CONTROL

SERVO DRIVERS

DECODER

DAC AUDIO

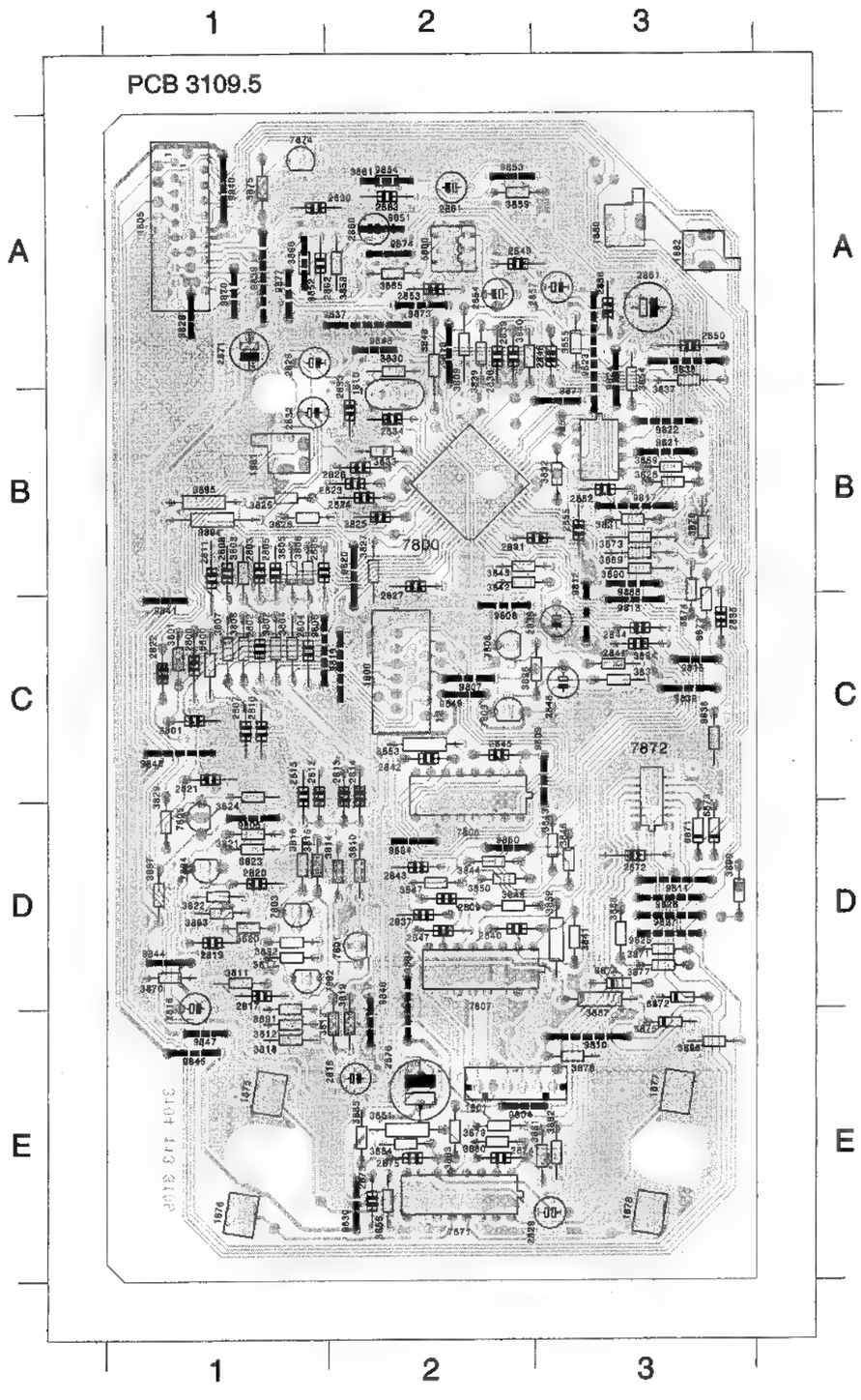
INNER SWITCH
CDM SWITCH
O/C SWITCH
CAR SWITCH
CARROUSEL MOTOR
TRAY MOTOR
DISC MOTOR
TRACK
FOCUS
SLED MOTOR
CDM12.1 DISC DRIVE
AUDIO OUT
LEFT
RIGHT
CPU

Component numbers:	
Servo-decoder:	x800 -> x850
Audio-part	x851 -> x870
Interface + Loader	x871 -> x899

PULSE DENSITY MODULATION
PULSE WIDTH MODULATION
PULSES DURING NEXT, PREVIOUS, STOP
DURING FOCUS SEARCH
ELECTRONIC VOLTMETER
DC VOLTAGES MEASURED IN PLAY MODE

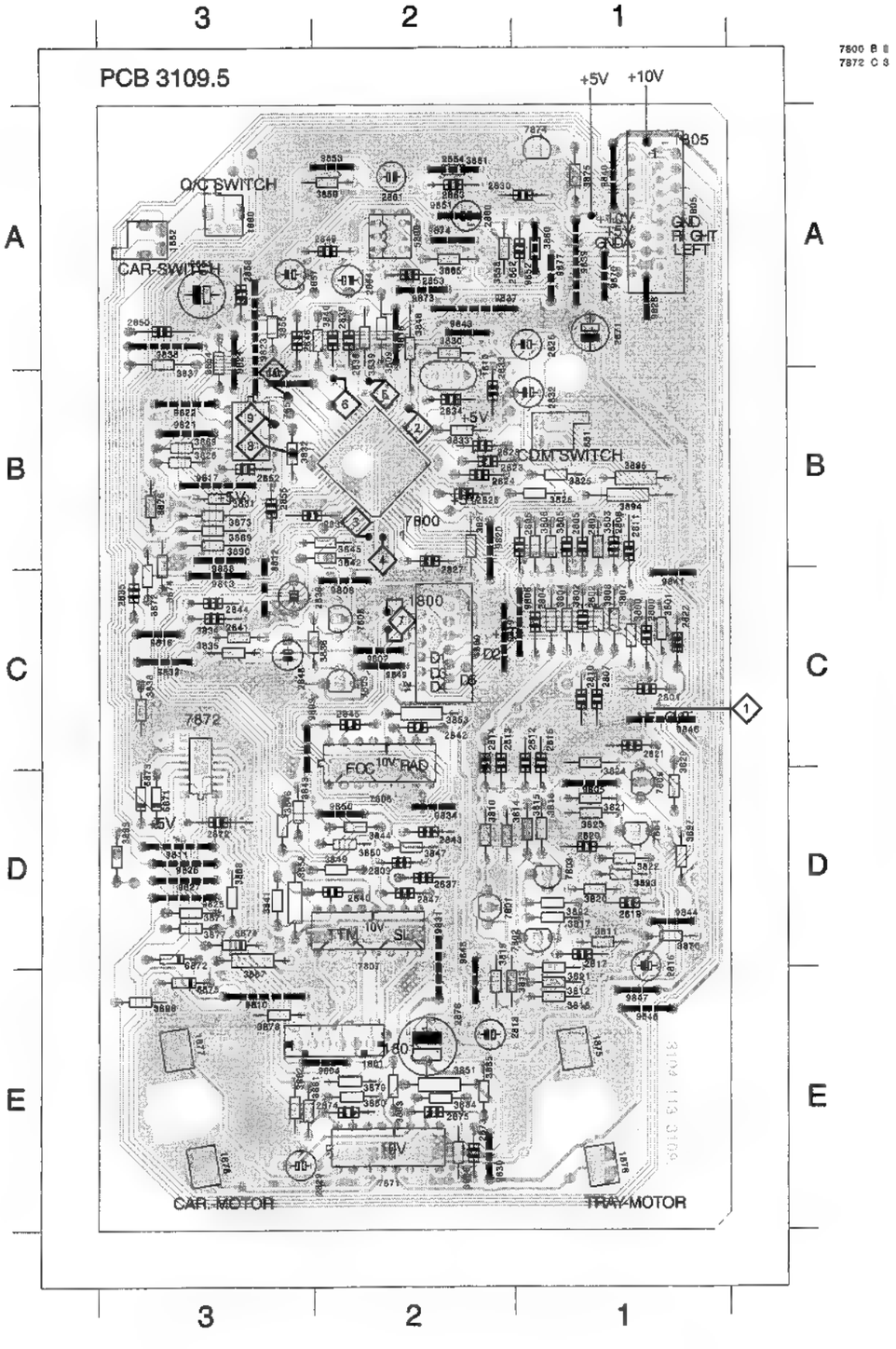
9625 3109_0330_A_BL

CDC LAYOUT-COMPONENT VIEW



1800	C 2	3812	E 1	7807	D 2
1801	E 2	3813	E 2	7808	C 2
1805	A 1	3814	D 2	7809	C 2
1810	B 2	3815	D 1	7851	B 3
1875	E 1	3816	D 1	7871	E 2
1876	E 1	3817	D 1	7874	A 1
1877	E 3	3818	E 1	9804	E 2
1878	E 3	3819	E 2	9805	D 1
1880	A 3	3820	D 1	9806	C 1
1881	B 1	3821	D 1	9807	C 2
1882	A 3	3822	D 1	9808	C 2
2800	C 1	3823	D 1	9809	C 3
2801	C 1	3824	C 1	9810	E 3
2802	C 1	3825	B 1	9811	D 3
2803	B 1	3826	B 1	9812	C 3
2804	C 1	3827	B 2	9813	C 3
2805	B 1	3828	B 3	9816	C 3
2806	B 1	3829	D 1	9817	B 3
2807	C 1	3830	A 2	9818	A 2
2808	B 1	3831	B 3	9819	C 2
2809	D 2	3832	B 3	9820	B 2
2810	C 1	3833	B 2	9821	B 3
2811	B 1	3834	C 3	9822	B 3
2812	C 1	3835	C 3	9823	A 3
2813	C 2	3836	C 3	9824	A 3
2814	C 2	3837	A 3	9825	D 3
2815	C 1	3838	C 3	9826	D 3
2816	D 1	3839	A 2	9827	D 3
2817	D 1	3840	A 2	9828	A 1
2818	E 2	3841	D 3	9830	E 2
2819	D 1	3842	B 2	9831	E 2
2820	D 1	3843	D 3	9832	C 3
2821	C 1	3844	D 2	9834	D 2
2822	C 1	3845	B 2	9837	A 2
2823	B 2	3846	D 3	9838	A 3
2824	B 2	3847	D 2	9839	A 1
2825	B 2	3848	A 2	9840	A 1
2826	A 1	3849	D 2	9841	C 1
2827	B 2	3850	D 2	9843	A 2
2828	B 2	3851	E 2	9844	D 1
2829	E 3	3852	D 3	9845	E 1
2830	A 1	3853	C 2	9846	C 1
2831	B 3	3854	A 3	9847	E 1
2832	B 1	3855	A 3	9848	E 2
2833	B 2	3858	A 2	9849	C 2
2834	B 2	3859	A 2	9850	D 2
2835	C 3	3860	A 1	9851	A 2
2836	C 3	3861	A 2	9852	A 1
2837	D 2	3865	A 2	9853	A 2
2838	A 2	3869	B 3	9854	A 2
2839	A 2	3870	D 1	9870	A 1
2840	D 2	3871	D 3	9871	B 3
2841	C 3	3872	C 3	9873	A 2
2842	C 2	3873	B 3	9874	A 2
2843	D 2	3874	B 3	9877	A 1
2844	C 3	3875	A 1	9888	B 3
2845	C 2	3876	B 3		
2846	A 3	3877	D 3		
2847	D 2	3878	E 3		
2848	C 3	3879	E 2		
2849	A 2	3880	E 2		
2850	A 3	3881	E 3		
2851	A 3	3882	E 3		
2852	B 3	3883	E 2		
2853	A 2	3884	E 2		
2854	A 2	3885	E 2		
2855	B 3	3886	E 2		
2857	A 3	3887	D 3		
2858	A 3	3888	D 3		
2860	A 2	3889	B 3		
2861	A 2	3890	B 3		
2862	A 1	3891	E 1		
2863	A 2	3892	D 1		
2871	A 1	3893	D 1		
2872	D 3	3894	B 1		
2873	E 2	3895	B 1		
2874	E 2	3896	E 3		
2875	E 2	3897	D 1		
2876	E 2	3899	D 3		
3800	C 1	5800	A 2		
3801	C 1	6871	D 3		
3802	C 1	6872	D 3		
3803	B 1	6873	D 3		
3804	C 1	6874	D 3		
3805	B 1	6875	E 3		
3806	B 1	7801	D 2		
3807	C 1	7802	D 1		
3808	C 1	7803	D 1		
3809	A 2	7804	D 1		
3810	D 2	7805	D 1		
3811	D 1	7806	C 2		

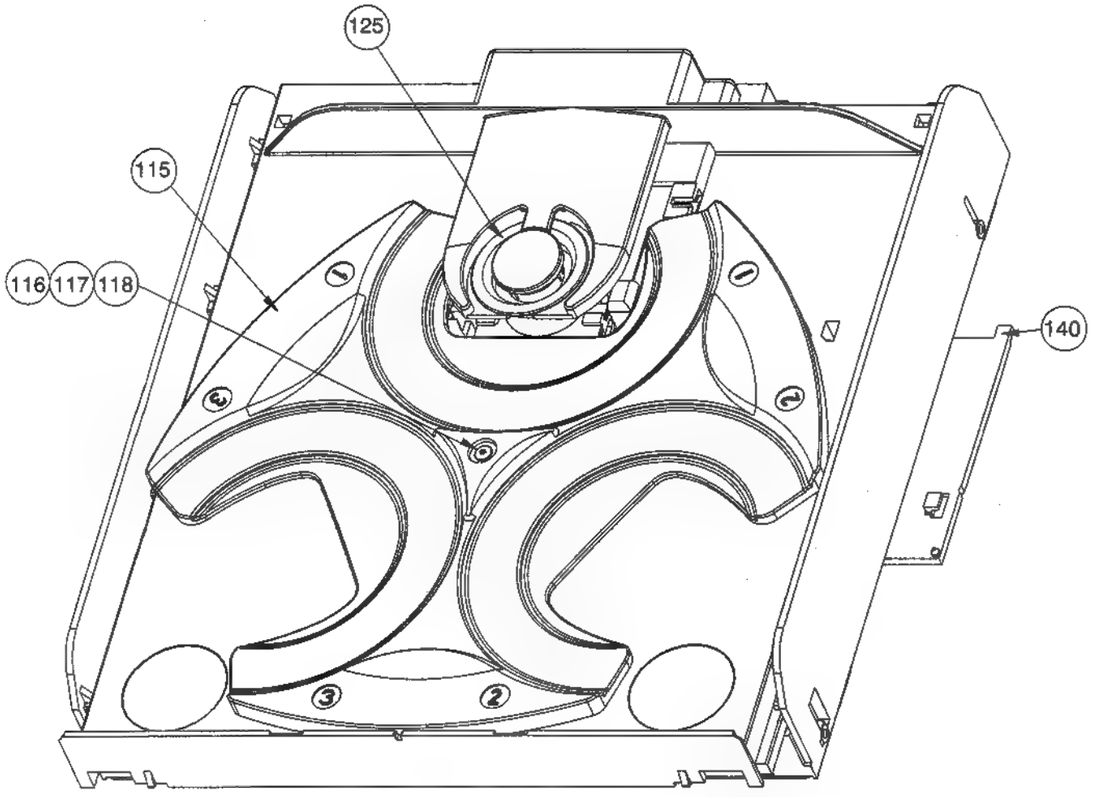
CDC LAYOUT-COPPER VIEW

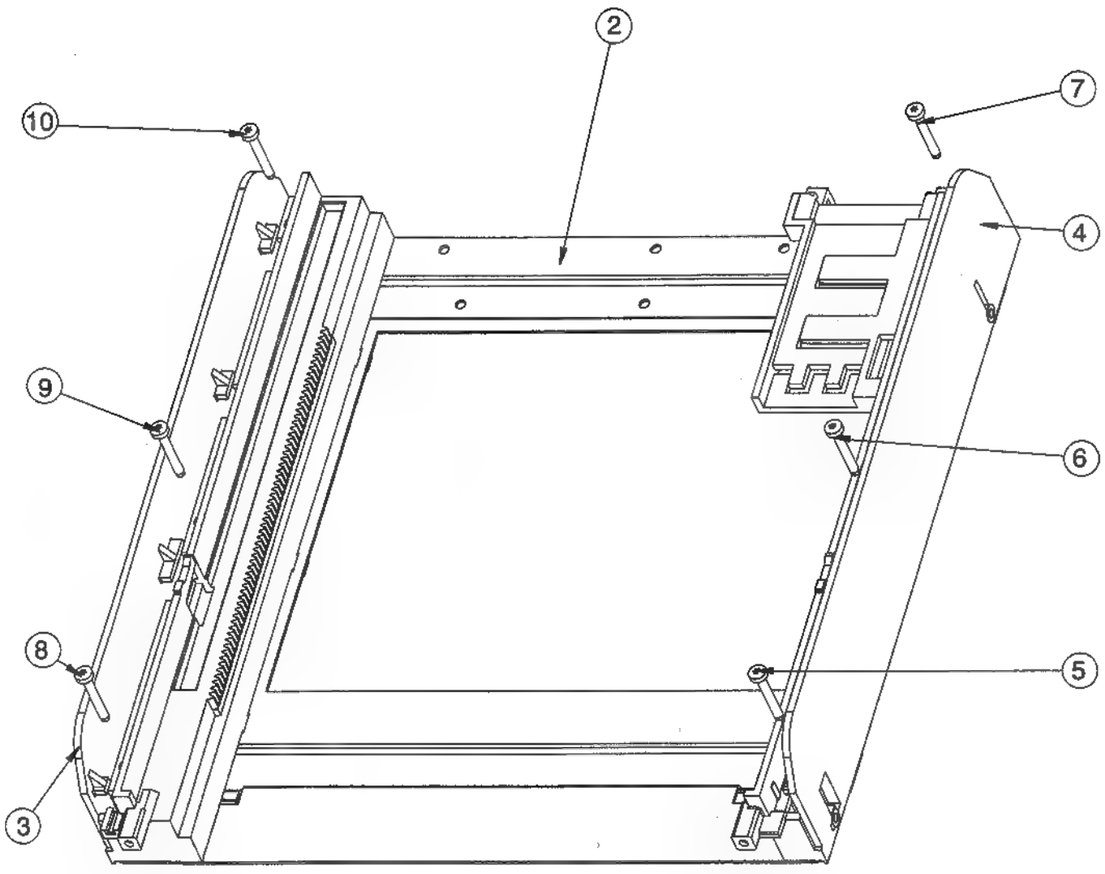


7800 B 8
7872 C 3

10 - 12

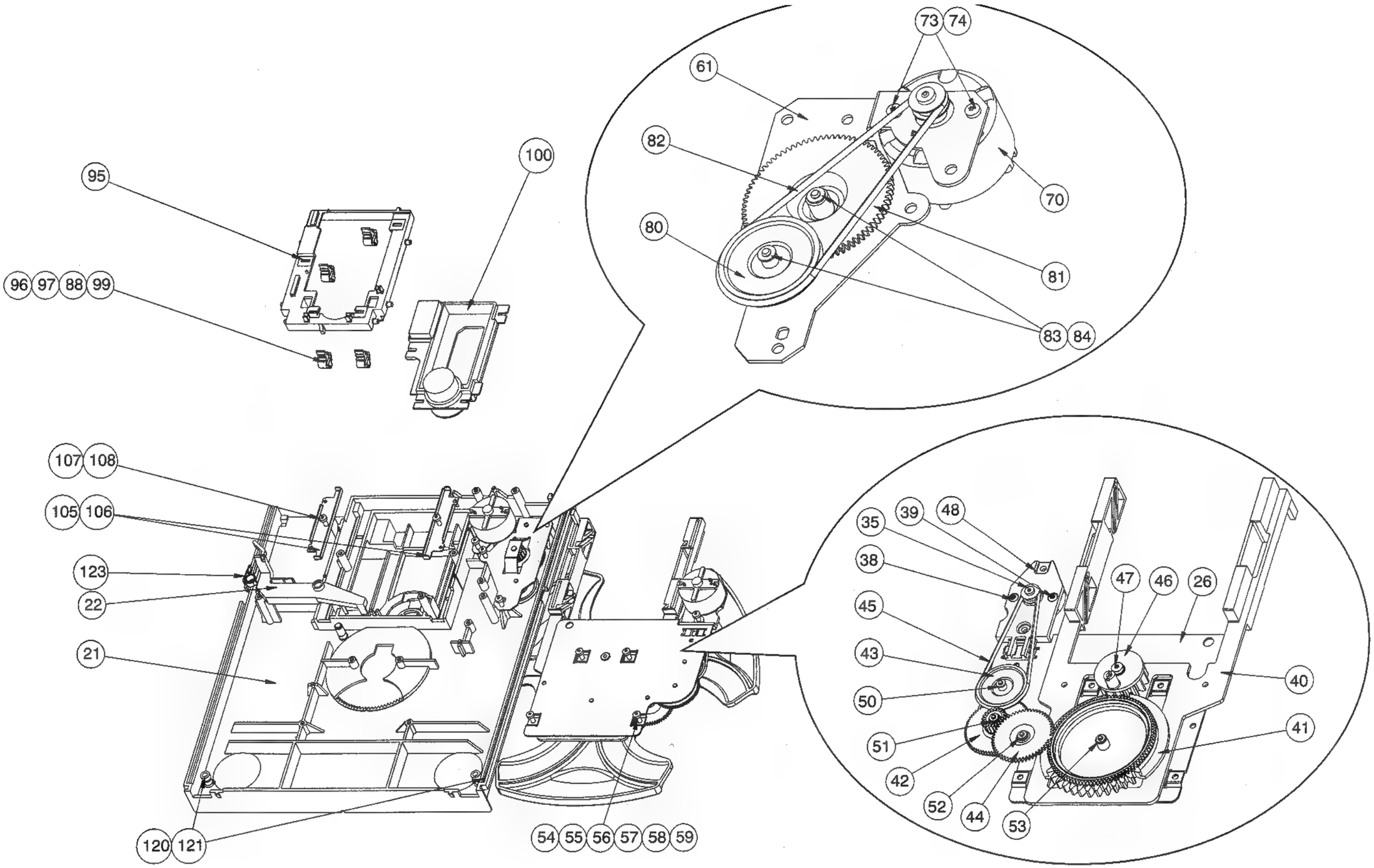
CDC EXPLODED VIEW I





10 - 13

CDC EXPLODED VIEW II



MECHANICAL PARTS

3	4822 463 11008	GUIDE LEFT
4	4822 463 11009	GUIDE RIGHT
21	4822 441 11615	DRAWER
22	4822 402 10088	TUMBLER
35	4822 361 10753	CARROUSEL MOTOR
38	4822 502 12548	SCREW M2.6 X 3.5
39	4822 502 12548	SCREW M2.6 X 3.5
40	4822 463 11011	IDE
41	4822 522 10509	CONTROL DISC
42	4822 522 10492	GEAR WHEEL
43	4822 528 10937	PULLEY
44	4822 522 10493	IDLER WHEEL
45	4822 358 10115	BELT
46	4822 466 10735	ECCENTRIC GEAR WHEEL
50	4822 532 12364	WASHER
51	4822 532 12364	WASHER
52	4822 532 12364	WASHER
53	4822 532 12364	WASHER
70	4822 361 10753	TRAY MOTOR
73	4822 502 12548	SCREW M 2.6 X 3.5
74	4822 502 12548	SCREW M 2.6 X 3.5
80	4822 528 10937	PULLEY
81	4822 522 10494	GEAR WHEEL
82	4822 358 10115	BELT
83	4822 532 12364	WASHER
84	4822 532 12364	WASHER
95	4822 404 10894	CDM SUPPORT
96	4822 325 50215	SUSPENSION
97	4822 325 50215	SUSPENSION
98	4822 325 50215	SUSPENSION
99	4822 325 50215	SUSPENSION
100	4822 691 30278	CDM-12.1 MECHANISM
115	4822 466 10736	CARROUSEL
117	4822 532 12365	BUSH
120	4822 532 51756	DAMPING GROMMET
121	4822 532 51756	DAMPING GROMMET
123	4822 402 10085	SWITCH BRACKET
125	4822 532 52386	CLAMPER
140	4822 466 10734	FLEX CABLE PROTECTION PLATE

MISCELLANEOUS

1880	4822 276 13503	OPEN/CLOSE SWITCH
1881	4822 276 13503	CDM POSITION SWITCH
1882	4822 276 13503	CARROUSEL SWITCH
8002	4822 320 11313	FLEXFOIL 15P
	4822 390 10136	LUBRICATING GREASE

CRYSTAL

1810	4822 242 73557	CRYSTAL 8.46 MHZ

CAPACITORS

2800	4822 126 10053	180pF 10%
2801	4822 122 10466	220pF 10% 50V
2802	4822 126 10053	180pF 10%
2803	4822 122 10466	220pF 10% 50V
2804	4822 126 12787	330pF 10% 50V
2805	4822 122 10466	220pF 10% 50V
2806	4822 122 10466	220pF 10% 50V
2807	4822 126 12878	1.5nF 10% 16V
2808	4822 122 10466	220pF 10% 50V
2809	4822 126 12882	100nF +80-20% 50V
2810	4822 122 10459	560pF 10% 50V
2811	4822 122 10466	220pF 10% 50V
2812	4822 122 33848	47pF 5% 50V
2813	4822 122 33848	47pF 5% 50V
2814	4822 122 33195	100pF 10% 50V
2815	4822 126 12573	18pF 5% 50V
2816	4822 124 23624	47µF 20% 16V
2817	4822 126 12787	330pF 10% 50V
2818	4822 124 23624	47µF 20% 16V
2819	4822 126 12787	330pF 10% 50V
2820	4822 126 10053	180pF 10%
2821	4822 126 11585	22nF +80-20% 25V
2822	4822 126 12339	2.2nF 10%
2823	4822 122 33848	47pF 5% 50V
2824	4822 126 11585	22nF +80-20% 25V
2825	4822 126 12882	100nF +80-20% 50V
2826	4822 124 23624	47µF 20% 16V
2827	4822 126 12882	100nF +80-20% 50V
2828	4822 126 12882	100nF +80-20% 50V
2829	4822 124 80865	10µF 20% 25V
2830	4822 126 12882	100nF +80-20% 50V
2831	4822 126 12882	100nF +80-20% 50V
2832	4822 124 23624	47µF 20% 16V
2835	4822 126 12882	100nF +80-20% 50V
2836	4822 124 23624	47µF 20% 16V

CAPACITORS

2837	4822 126 12882	100nF +80-20% 50V
2838	4822 126 12882	100nF +80-20% 50V
2839	4822 126 12882	100nF +80-20% 50V
2840	4822 126 12882	100nF +80-20% 50V
2841	4822 122 10574	1.2nF 10% 16V
2842	4822 121 51387	10nF 20% 16V
2843	4822 126 12882	100nF +80-20% 50V
2844	4822 122 10574	1.2nF 10% 16V
2845	4822 121 51387	10nF 20% 16V
2846	4822 126 11585	22nF +80-20% 25V
2847	4822 126 12882	100nF +80-20% 50V
2848	4822 124 23624	47µF 20% 16V
2850	4822 122 33197	1nF 10% 50V
2851	4822 124 41997	470µF 10V
2852	4822 126 12882	100nF +80-20% 50V
2855	4822 126 12882	100nF +80-20% 50V
2856	4822 126 12882	100nF +80-20% 50V
2860	4822 124 41579	10µF 20% 50V
2861	4822 124 41579	10µF 20% 50V
2862	4822 126 12339	2.2nF 10%
2863	4822 126 12339	2.2nF 10%
2872	4822 126 12882	100nF +80-20% 50V
2873	4822 126 12882	100nF +80-20% 50V
2874	4822 126 11585	22nF +80-20% 25V
2875	4822 126 11585	22nF +80-20% 25V
2876	4822 124 23794	470µF 20% 16V
2881	4822 126 12882	100nF +80-20% 50V

RESISTORS

3800	4822 116 52239	120k 5% 0.5W
3801	4822 116 83864	10k 5% 0.5W
3802	4822 116 52239	120k 5% 0.5W
3803	4822 116 83864	10k 5% 0.5W
3804	4822 116 52291	56k 5% 0.5W
3805	4822 116 83864	10k 5% 0.5W
3806	4822 116 83864	10k 5% 0.5W
3807	4822 116 83864	10k 5% 0.5W
3808	4822 116 83864	10k 5% 0.5W
3810	4822 050 11002	1k 1% 0.4W
3811	4822 116 52267	30k 5% 0.5W
3812	4822 116 52272	330k 5% 0.5W
3813	4822 116 52284	47k 5% 0.5W
3814	4822 116 83882	39k 5% 0.5W
3815	4822 050 11002	1k 1% 0.4W

RESISTORS

3816	4822 116 52175	100Ω 5% 0.5W
3817	4822 050 11002	1k 1% 0.4W
3818	4822 116 52175	100Ω 5% 0.5W
3819	4822 116 52222	390Ω 5% 0.5W
3820	4822 116 52223	430Ω 5% 0.5W
3821	4822 116 52249	1k8 5% 0.5W
3822	4822 116 52223	430Ω 5% 0.5W
3823	4822 116 52249	1k8 5% 0.5W
3824	4822 116 52269	3k3 5% 0.5W
3825	4822 116 52256	2k2 5% 0.5W
3826	4822 116 52257	22k 5% 0.5W
3827	4822 116 52278	390k 5% 0.5W
3828	4822 116 52257	22k 5% 0.5W
3829	4822 116 52175	100Ω 5% 0.5W
3830	4822 116 52235	1M 5% 0.5W
3831	4822 116 52257	22k 5% 0.5W
3832	4822 116 52215	220Ω 5% 0.5W
3833	4822 116 83864	10k 5% 0.5W
3834	4822 116 83864	10k 5% 0.5W
3835	4822 116 52256	2k2 5% 0.5W
3836	4822 050 11002	1k 1% 0.4W
3837	4822 050 11002	1k 1% 0.4W
3838	4822 050 11002	1k 1% 0.4W
3839	4822 116 52245	150k 5% 0.5W
3840	4822 116 52245	150k 5% 0.5W
3841	4822 116 52289	5k6 5% 0.5W
3842	4822 116 83864	10k 5% 0.5W
3843	4822 116 52303	8k2 5% 0.5W
3844	4822 116 52224	470Ω 5% 0.5W
3845	4822 116 83864	10k 5% 0.5W
3846	4822 116 52303	8k2 5% 0.5W
3847	4822 116 52224	470Ω 5% 0.5W
3848	4822 116 52303	8k2 5% 0.5W
3849	4822 116 52303	8k2 5% 0.5W
3850	4822 116 52224	470Ω 5% 0.5W
3851	4822 052 10338	3Ω3 5% 0.33W
3852	4822 052 10338	3Ω3 5% 0.33W
3853	4822 052 10338	3Ω3 5% 0.33W
3858	4822 116 52257	22k 5% 0.5W
3859	4822 116 52257	22k 5% 0.5W
3860	4822 116 52224	470Ω 5% 0.5W
3861	4822 116 52224	470Ω 5% 0.5W
3869	4822 116 52175	100Ω 5% 0.5W
3870	4822 116 52226	560Ω 5% 0.5W
3871	4822 116 83864	10k 5% 0.5W

ELECTRICAL PARTLIST CDC3 INTERFACE BOARD

RESISTORS

3872	4822 116 83864	10k 5% 0.5W
3873	4822 116 52224	470Ω 5% 0.5W
3874	4822 116 83864	10k 5% 0.5W
3875	4822 116 83864	10k 5% 0.5W
3876	4822 116 83874	220k 5% 0.5W
3877	4822 116 83864	10k 5% 0.5W
3878	4822 116 83864	10k 5% 0.5W
3879	4822 116 83864	10k 5% 0.5W
3880	4822 116 52219	330Ω 5% 0.5W
3881	4822 116 83864	10k 5% 0.5W
3882	4822 116 52284	47k 5% 0.5W
3883	4822 116 52234	100k 5% 0.5W
3884	4822 116 52276	3k9 5% 0.5W
3885	4822 116 52234	100k 5% 0.5W
3886	4822 116 52284	47k 5% 0.5W
3887	4822 052 10221	220Ω 5% 0.33W
3888	4822 116 83864	10k 5% 0.5W
3894	4822 052 10338	3Ω3 5% 0.33W
3895	4822 052 10338	3Ω3 5% 0.33W
3896	4822 116 83864	10k 5% 0.5W
3897	4822 116 52175	100Ω 5% 0.5W

DIODES

6871	4822 130 30621	1N4148
6872	4822 130 30621	1N4148
6873	4822 130 30621	1N4148
6874	4822 130 30621	1N4148
6875	4822 130 34233	BZX79-C5V1

INTERGRATED CIRCUITS

7800	4822 209 12752	SAA7378GP/M1
7806	4822 209 32852	TDA7073A/N2
7807	4822 209 32852	TDA7073A/N2
7851	4822 209 32421	TDA1311A/N2
7871	4822 209 32852	TDA7073A/N2
7872	5322 209 11306	HEF4094BT

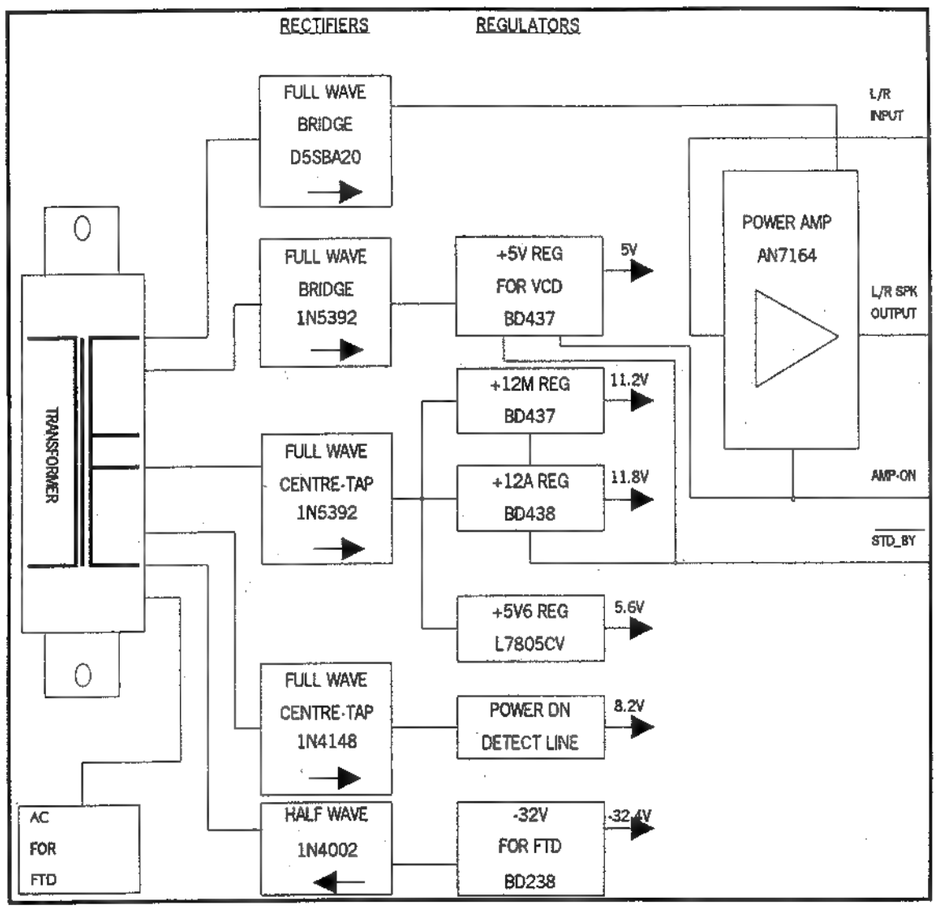
TRANSISTORS

7801	4822 130 40902	BF240
7802	4822 130 40937	BC548B
7803	4822 130 44197	BC558B
7804	4822 130 40937	BC548B
7805	4822 130 40937	BC548B

TRANSISTORS

7808	4822 130 40937	BC548B
7809	4822 130 41715	BC328-40
7874	4822 130 40937	BC548B

POWER BOARD



WARNING : *If the power amplifier heatsink is not attached to the power amplifier during testing, do not make the amplifier deliver more than 500mW per channel. It is advisable to inject signal one channel at a time whenever possible and to remove all input signal immediately after test.*

11 - 1

CONNECTOR 12 TO 1210

1	PA	AC input to power amplifier rectifier
2	PA	AC input to power amplifier rectifier *[Note:Pin1 is shorted to Pin 2]*
3	PA	AC input to power amplifier rectifier
4	PA	AC input to power amplifier rectifier *[Note:Pin 3 is shorted to Pin 4]*
5	+12V/+5V6	AC input to +12V & +5V6 rectifier
6	GND	Centre-tap of secondary winding of Pin 5 ,7 and 8
7	+12V/+5V6	AC input to +12V & +5V6 rectifier
8	-35V	AC input to FTD rectifier
9	FTD	FTD filament voltage
10	FTD	FTD filament voltage

CONNECTOR 1222 — FTD SUPPLY AND uP CONTROL SIGNALS

1	STDBY	Standby signal from microprocessor
2	~F1	AC voltage for FTD filament
3	~F2	AC voltage for FTD filament
4	-32V	-32.4V voltage for FTD grid
5	PWD DN	Power down signal to microprocessor

CONNECTOR 1223 — AF SIGNAL AND SUPPLY

1	L	Left input for power amplifier
2	⊥ a	AF ground
3	R	Right input for power amplifier
4	AMP_ON	Control from up to switch power amplifier and VCD regulator to standby
5	+12M	+12V for tapedeck motors and CD mechanisms
6	⊥ B	Ground for +12A
7	+12A	+12V for analog circuitries
8	⊥ D	Motor and Digital ground
9	+5V6	+5V6 for set uP and VCD uP

CONNECTOR 1224 — AF SIGNAL AND SUPPLY *[OPTION]*

[Connections as 1223 but with digital ground and motor ground seperated]

1	L	Left input for power amplifier
2	⊥ a	AF ground
3	R	Right input for power amplifier
4	AMP_ON	Control from uP to switch power amplifier and VCD regulator to standby
5	+12A	+12V for analog circuitries
6	⊥ B	Ground for +12A
7	+12M	+12V for tapedeck motors and CD mechanisms
8	⊥ M	Motor ground
9	+5V6	+5V6 for set up and VCD up
10	⊥ D	Digital ground

CONNECTOR 1237 — VCD SUPPLY *[OPTION]*

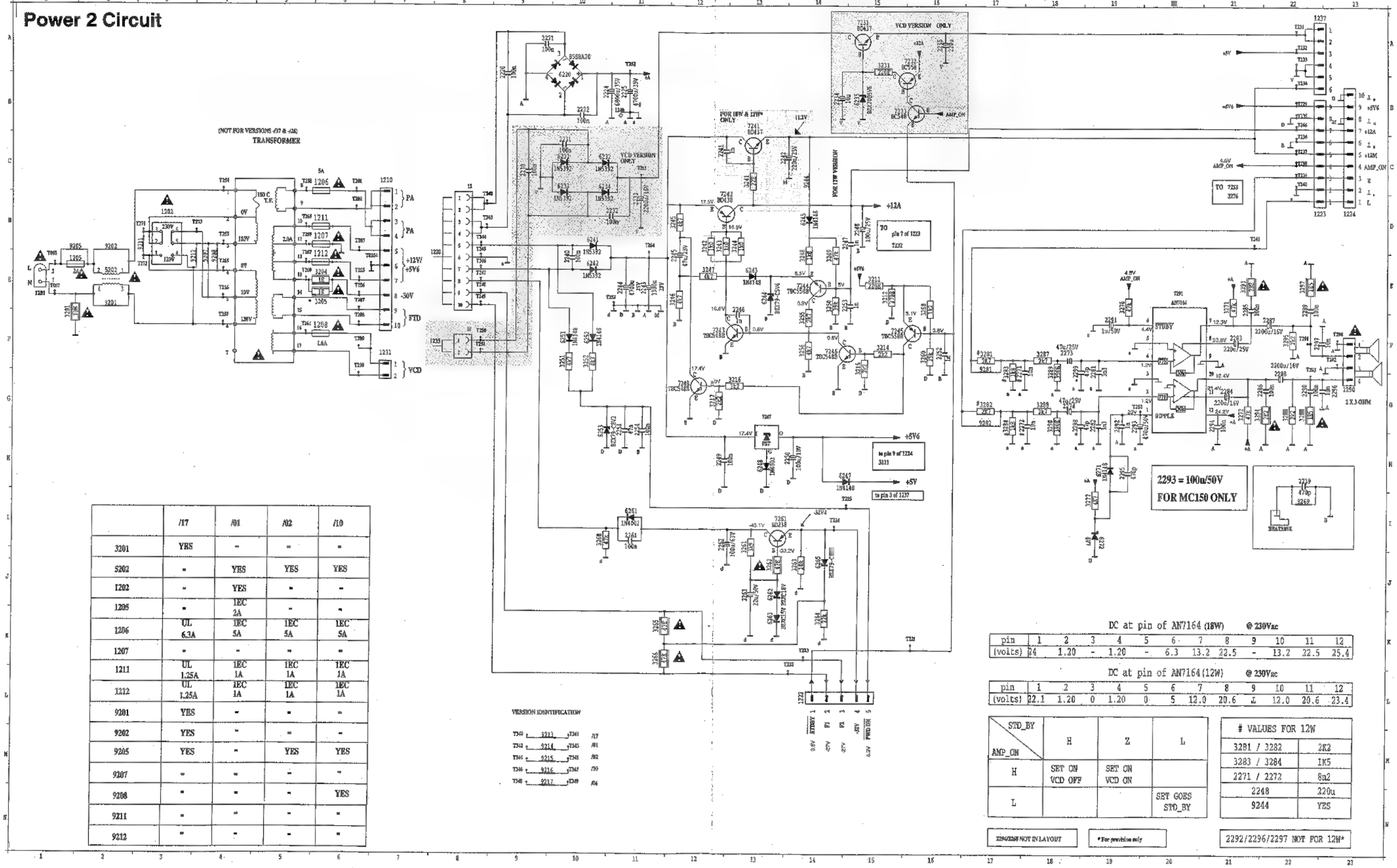
1	+VCD	+5V for VCD module
2	+VCD	+5V for VCD module
3	+Vsl	+5V for VCD uP-SRAM
4	GND	Ground
5	GND	Ground
6	+VA	+12V for VCD servo drivers

CONNECTOR 13 TO 1231 *[OPTION]*

1	VCD	AC input to VCD rectifier
2	VCD	AC input to VCD rectifier

11 - 2

Power 2 Circuit



	/17	/01	/02	/10
3201	YES	"	"	"
5202	"	YES	YES	YES
1202	"	YES	"	"
1205	"	IEC 2A	"	"
1206	UL 6.3A	IEC 5A	IEC 5A	IEC 5A
1207	"	"	"	"
1211	UL 1.25A	IEC 1A	IEC 1A	IEC 1A
1212	UL 1.25A	IEC 1A	IEC 1A	IEC 1A
9201	YES	"	"	"
9202	YES	"	"	"
9205	YES	"	YES	YES
9207	"	"	"	"
9208	"	"	"	YES
9211	"	"	"	"
9212	"	"	"	"

DC at pin of AN7164 (18W) @ 230Vac

pin	1	2	3	4	5	6	7	8	9	10	11	12
(volts)	24	1.20	-	1.20	-	6.3	13.2	22.5	-	13.2	22.5	25.4

DC at pin of AN7164 (12W) @ 230Vac

pin	1	2	3	4	5	6	7	8	9	10	11	12
(volts)	22.1	1.20	0	1.20	0	5	12.0	20.6	.L	12.0	20.6	23.4

STD_BY / AMP_ON	H	Z	L
H	SET ON VCD OFF	SET ON VCD ON	
L			SET GOES STD_BY

# VALUES FOR 12W	
3281 / 3282	2K2
3283 / 3284	1K5
2271 / 2272	8n2
2248	220u
9244	YES

2294/2268 NOT IN LAYOUT

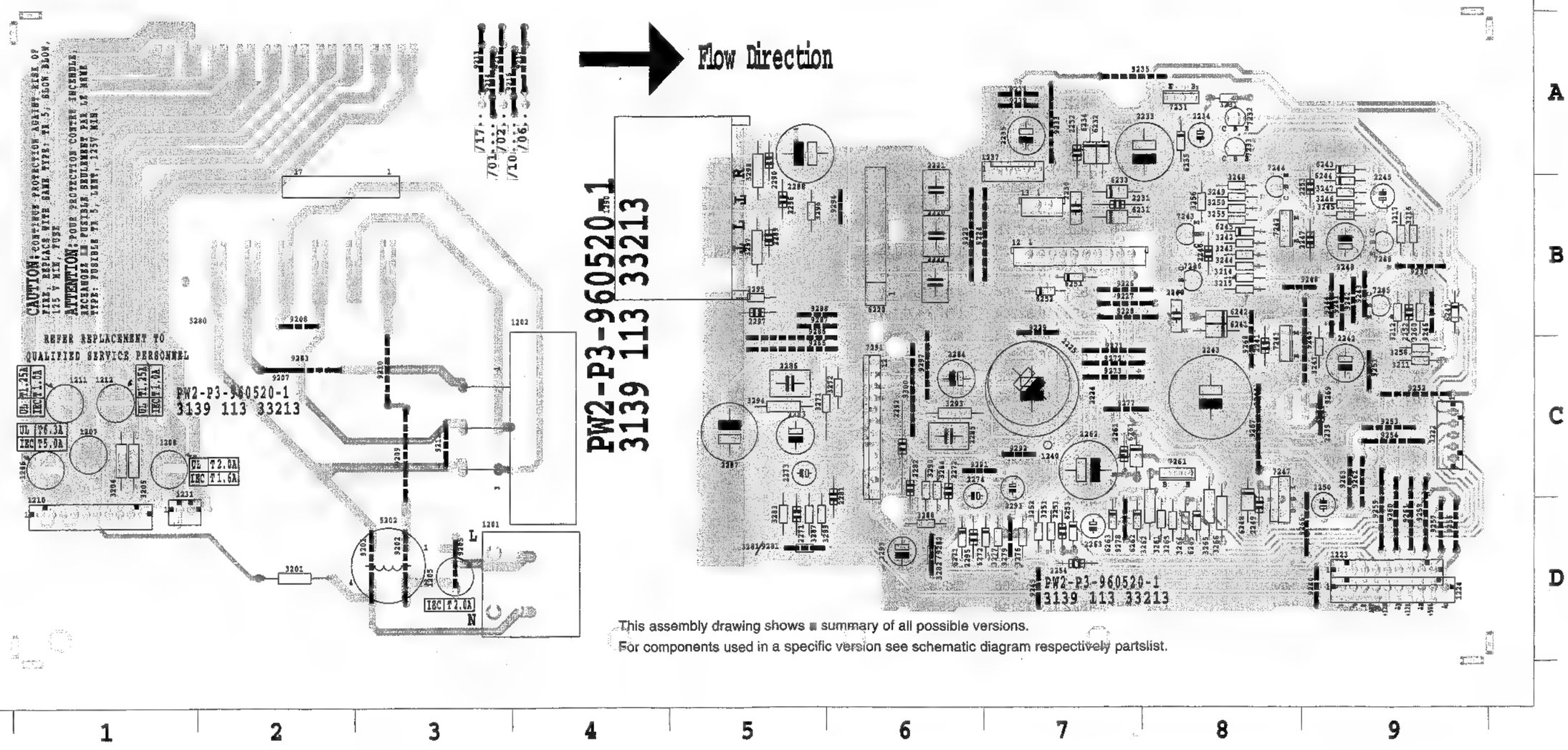
* For provision only

2292/2296/2297 NOT FOR 12W*

11 - 3

12 B 7	1211 C 1	2220 B 6	2234 A 8	2246 B 8	2261 C 7	2283 C 5	2292 C 6	3212 B 9	3244 B 8	3255 B 8	3266 D 8	3287 D 5	3298 A 5	6241 B 8	6253 D 7	7233 A 8	7261 C 8	9210 C 3	9226 B 7	9240 D 9	9251 C 9	9261 D 9	9273 C 7	9288 B 5
13 B 7	1212 C 1	2221 B 6	2235 A 7	2247 B 9	2262 C 7	2284 C 6	2293 D 6	3214 B 8	3245 B 9	3256 B 8	3271 C 5	3288 D 6	5202 D 3	6242 B 8	6261 C 7	7241 C 8	7291 C 6	9212 C 3	9227 B 7	9241 B 9	9252 C 9	9262 C 9	9277 C 7	9291 C 6
1201 D 4	1222 C 9	2222 B 6	2239 C 9	2248 B 9	2263 D 7	2285 C 6	2295 D 6	3215 B 8	3246 B 9	3258 C 9	3272 C 6	3289 D 5	5280 B 2	6243 A 9	6262 D 7	7242 B 8	9201 D 3	9213 A 3	9228 B 7	9242 B 9	9253 C 9	9263 C 9	9278 D 7	9292 C 7
1202 C 3	1223 D 9	2224 C 7	2240 B 8	2249 D 8	2271 D 5	2286 C 5	2296 B 5	3216 B 9	3247 B 9	3260 B 9	3276 D 7	3290 C 6	6220 B 6	6244 B 9	6263 D 7	7243 B 8	9202 D 3	9214 A 3	9229 B 7	9243 B 9	9254 C 9	9266 D 9	9279 D 7	9294 B 6
1205 D 3	1224 D 9	2225 C 7	2241 C 8	2250 D 9	2272 C 6	2287 C 5	2297 B 5	3217 B 9	3248 B 8	3261 D 8	3277 D 7	3293 C 6	6231 B 7	6245 B 8	6265 D 8	7244 B 8	9203 C 2	9215 A 3	9230 B 9	9244 B 9	9256 D 9	9267 C 8	9281 D 5	9297 C 6
1206 C 1	1231 D 1	2230 B 7	2242 C 9	2251 D 7	2273 C 5	2288 A 5	3201 D 2	3231 A 8	3249 B 8	3262 D 8	3281 D 5	3294 C 5	6232 A 7	6247 B 9	6271 D 6	7245 B 9	9205 D 3	9216 A 4	9231 A 7	9245 C 9	9257 D 9	9268 C 8	9282 D 6	9300 C 6
1207 C 1	1237 A 7	2231 B 7	2243 C 8	2252 B 9	2274 C 6	2289 B 5	3204 C 1	3241 C 9	3250 B 8	3263 D 8	3282 D 6	3295 B 5	6233 B 7	6248 D 8	6272 D 7	7246 B 8	9207 C 2	9217 A 4	9232 A 7	9246 B 9	9258 D 9	9269 C 9	9285 C 5	
1208 C 1	1240 C 7	2232 A 7	2244 C 8	2253 B 9	2281 C 6	2290 A 5	3205 C 1	3242 B 8	3251 D 7	3264 D 8	3283 D 5	3296 B 5	6234 A 7	6251 B 7	7231 A 8	7247 D 8	9208 B 2	9223 B 6	9233 A 7	9248 B 8	9259 D 9	9271 C 7	9286 C 5	
1210 D 1	1290 B 5	2233 A 8	2245 B 9	2254 D 7	2282 C 6	2291 C 7	3211 C 9	3243 B 8	3252 D 7	3265 D 8	3284 C 6	3297 B 5	6235 A 8	6252 B 7	7232 A 8	7248 B 9	9209 C 3	9224 B 6	9235 A 7	9249 D 7	9260 D 9	9272 C 7	9287 B 5	

Component Layout Componentside View



This assembly drawing shows ■ summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

11-4

ELECTRICAL PARTS LIST - POWER BOARD

MISCELLANEOUS

21	4822 492 63051	Spring Clip 56364
22	4822 255 40128	Spring Clip T0126
24	4822 492 11084	Spring IC
31	4822 255 10301	Heat Sink Power
1201	4822 265 31015	Mains Socket
1202	4822 272 10269	Voltage Selector .../21 only
1205	4822 071 52002	Fuse 2A 250V
1206	4822 071 55002	Fuse 5A 250V
1211	4822 071 51002	Fuse 1A 250V
1212	4822 071 51002	Fuse 1A 250V

CAPACITORS

2220	5322 121 42386	100nF 5% 63V
2221	5322 121 42386	100nF 5% 63V
2222	5322 121 42386	100nF 5% 63V
2224	4822 124 11516	6800µF 20% 35V
2239	4822 122 33519	470pF 10% 50V
2240	5322 121 42386	100nF 5% 63V
2243	4822 124 42057	3300µF 20% 25V
2245	4822 124 40433	47µF 20% 25V
2246	4822 122 33197	1nF 10% 50V
2247	4822 122 33197	1nF 10% 50V
2248	4822 124 22263	220µF 20% 25V
2249	4822 126 12882	100nF +80/-20% 50V
2250	4822 124 41584	100µF 20% 10V
2251	4822 126 12785	47nF 50V
2252	4822 122 33197	1nF 10% 50V
2253	4822 122 33197	1nF 10% 50V
2261	4822 126 12882	100nF +80/-20% 50V
2262	4822 124 40255	100µF 20% 63V
2263	4822 124 41596	22µF 20% 50V
2271	4822 122 10575	8,2nF 20% 16V
2272	4822 122 10575	8,2nF 20% 16V
2273	4822 124 40433	47µF 20% 25V
2274	4822 124 40433	47µF 20% 25V
2281	4822 122 10577	3,3nF 10% 16V
2282	4822 122 10577	3,3nF 10% 16V
2283	4822 124 22263	220µF 20% 25V
2284	4822 124 22263	220µF 20% 25V
2285	5322 121 42386	100nF 5% 63V
2286	5322 121 42386	100nF 5% 63V
2287	4822 124 80148	2200µF 20% 16V
2288	4822 124 80148	2200µF 20% 16V
2289	4822 126 12882	100nF +80/-20% 50V
2290	4822 126 12882	100nF +80/-20% 50V
2291	4822 124 40242	1µF 20% 63V
2292	4822 122 33197	1nF 10% 50V
2293	4822 124 42392	470µF 20% 50V
2295	4822 122 33519	470pF 10% 50V

RESISTORS

3204	4822 052 10108	1E 5% 0,33W
3211	4822 116 83872	220E 5% 0,5W
3212	4822 116 52217	270E 5% 0,5W
3214	4822 116 52256	2k2 5% 0,5W
3215	4822 116 52256	2k2 5% 0,5W
3216	4822 116 52256	2k2 5% 0,5W
3217	4822 116 52256	2k2 5% 0,5W
3242	4822 050 11002	1k 1% 0,4W
3243	4822 050 11002	1k 1% 0,4W
3244	4822 050 11002	1k 1% 0,4W
3245	4822 116 52283	4k7 5% 0,5W
3246	4822 116 52283	4k7 5% 0,5W
3247	4822 116 52283	4k7 5% 0,5W
3248	4822 050 11002	1k 1% 0,4W
3249	4822 116 52284	47K 5% 0,5W
3250	4822 116 83882	39K 5% 0,5W
3251	4822 116 52283	4k7 5% 0,5W
3252	4822 116 52283	4k7 5% 0,5W
3255	4822 116 52263	2k7 5% 0,5W
3256	4822 116 52283	4k7 5% 0,5W
3258	4822 116 52207	1k2 5% 0,5W
3260	4822 116 83882	39K 5% 0,5W
3261	4822 116 52276	3k9 5% 0,5W
3262	4822 052 10479	47E 5% 0,33W
3263	4822 116 83864	10K 5% 0,5W
3264	4822 116 52257	22K 5% 0,5W
3265	4822 116 52175	100E 5% 0,5W
3266	4822 116 52175	100E 5% 0,5W
3271	4822 116 52284	47K 5% 0,5W
3272	4822 116 52284	47K 5% 0,5W
3276	4822 116 52284	47K 5% 0,5W
3277	4822 116 52283	4k7 5% 0,5W
3281	4822 116 52256	2k2 5% 0,5W
3282	4822 116 52256	2k2 5% 0,5W
3283	4822 116 52243	1k5 5% 0,5W
3284	4822 116 52243	1k5 5% 0,5W
3287	4822 116 52263	2k7 5% 0,5W
3288	4822 116 52263	2k7 5% 0,5W
3289	4822 116 52222	390E 5% 0,5W
3290	4822 116 52222	390E 5% 0,5W
3293	4822 052 10228	2E2 5% 0,33W
3294	4822 052 10228	2E2 5% 0,33W
3295	4822 116 52256	2k2 5% 0,5W
3296	4822 116 52256	2k2 5% 0,5W
3297	4822 117 12148	1E5 5% 0,33W
3298	4822 117 12148	1E5 5% 0,33W

COILS

5202	4822 157 71285	COIL 400µH

DIODES

6220	4822 130 82078	D5SBA20
6241	5322 130 80686	1N5392
6242	5322 130 80686	1N5392
6243	4822 130 30621	1N4148
6244	4822 130 34173	BZX79-C5V6
6245	4822 130 34173	BZX79-C5V6
6247	4822 130 30621	1N4148
6248	5322 130 30684	1N4002GP
6251	4822 130 30621	1N4148
6252	4822 130 30621	1N4148
6253	4822 130 34382	BZX79-C8V2
6261	5322 130 30684	1N4002GP
6262	4822 130 31024	BZX79-C18
6263	4822 130 34281	BZX79-C15
6265	4822 130 34174	BZX79-C4V7
6271	4822 130 30621	1N4148
6272	4822 130 34174	BZX79-C4V7

TRANSISTORS & INTEGRATED CIRCUITS

7242	4822 130 40995	BD438
7243	4822 130 40937	BC548B
7244	4822 130 44197	BC558B
7245	4822 130 44197	BC558B
7246	4822 130 40937	BC548B
7247	4822 209 80817	L7805CV
7248	4822 130 40937	BC548B
7261	4822 130 40917	BD238
7291	4822 209 90411	AN7164

NOTE: Only the parts mentioned in this list are normal service spare parts.

AF2 BOARD

BRIEF INTRODUCTION OF PCBAS AF-2:

The AF2 board consists of the following :

a. SOFAC IC which includes functions such as source selection, loudness control, bass control, treble control, front/rear volume control and muting function. All function are controllable via I^2C data from the master microprocessor.

   The SOFAC IC caters for 4 input sources, namely tuner, tape, CD and AUX.

b. Karaoke Mic. Mixing. (not applicable for MC150/MC170)
   NK : Non Karaoke
   SK : Simple Karaoke which caters for mic. mixing with additional mic. amp. board.
   FK : Full Karaoke with vocal fader and echo effect with additional Karaoke board.

c. Incredible Sound using IC LM324DT quad Op-Amp to create phase shifting and spatial effect.

d. Headphone Amplifier using Op-Amp . NJM4556M.

e. CD standby control circuit which switches on the CD servo supply in CD mode only.

f. Headphone Sensing circuit to mute speaker for Dolby Prologic application.

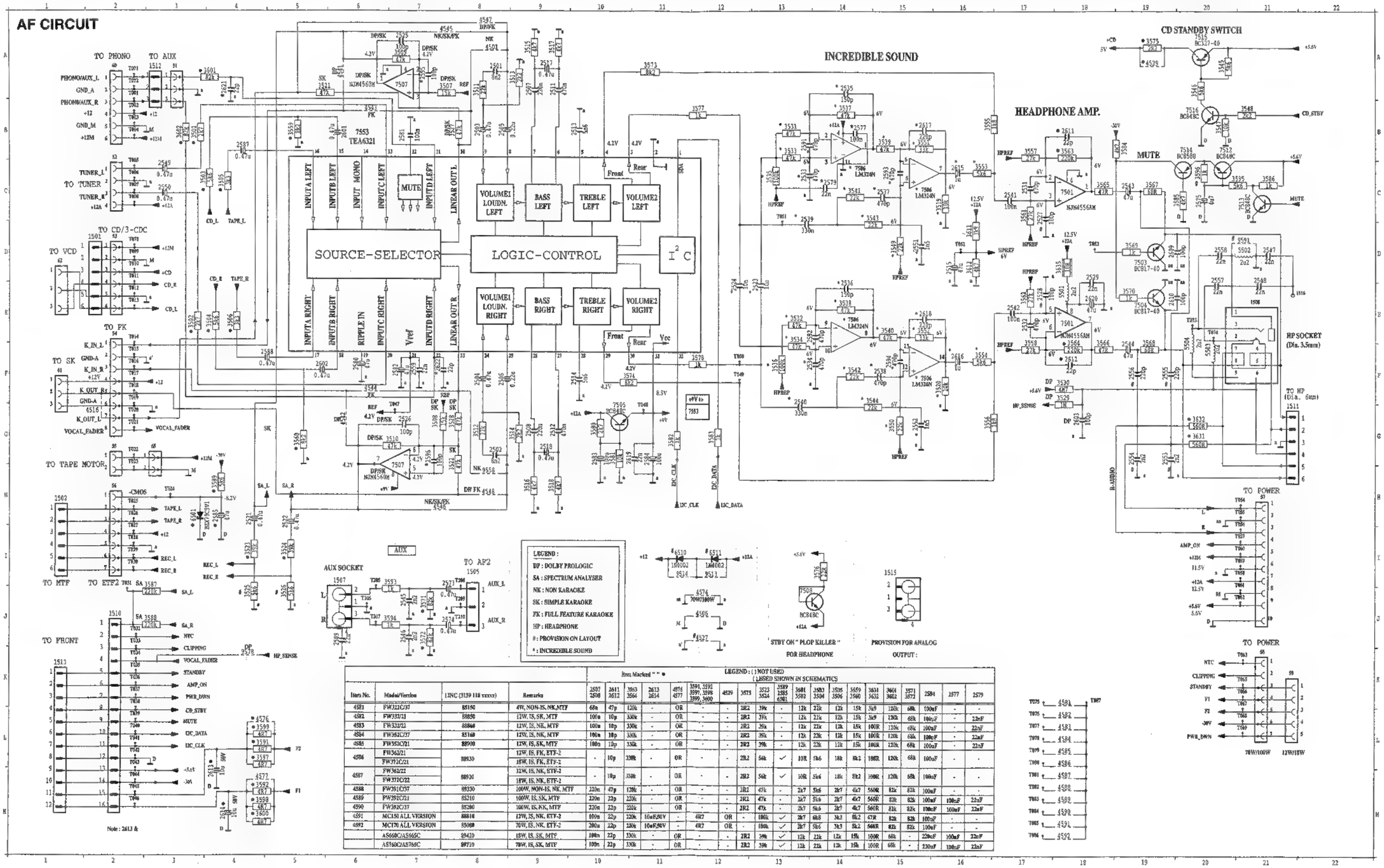
f. Attenuation network is provided at the output of the AF2 board for interfacing with power board of different output power.

12 - 1

NOTES

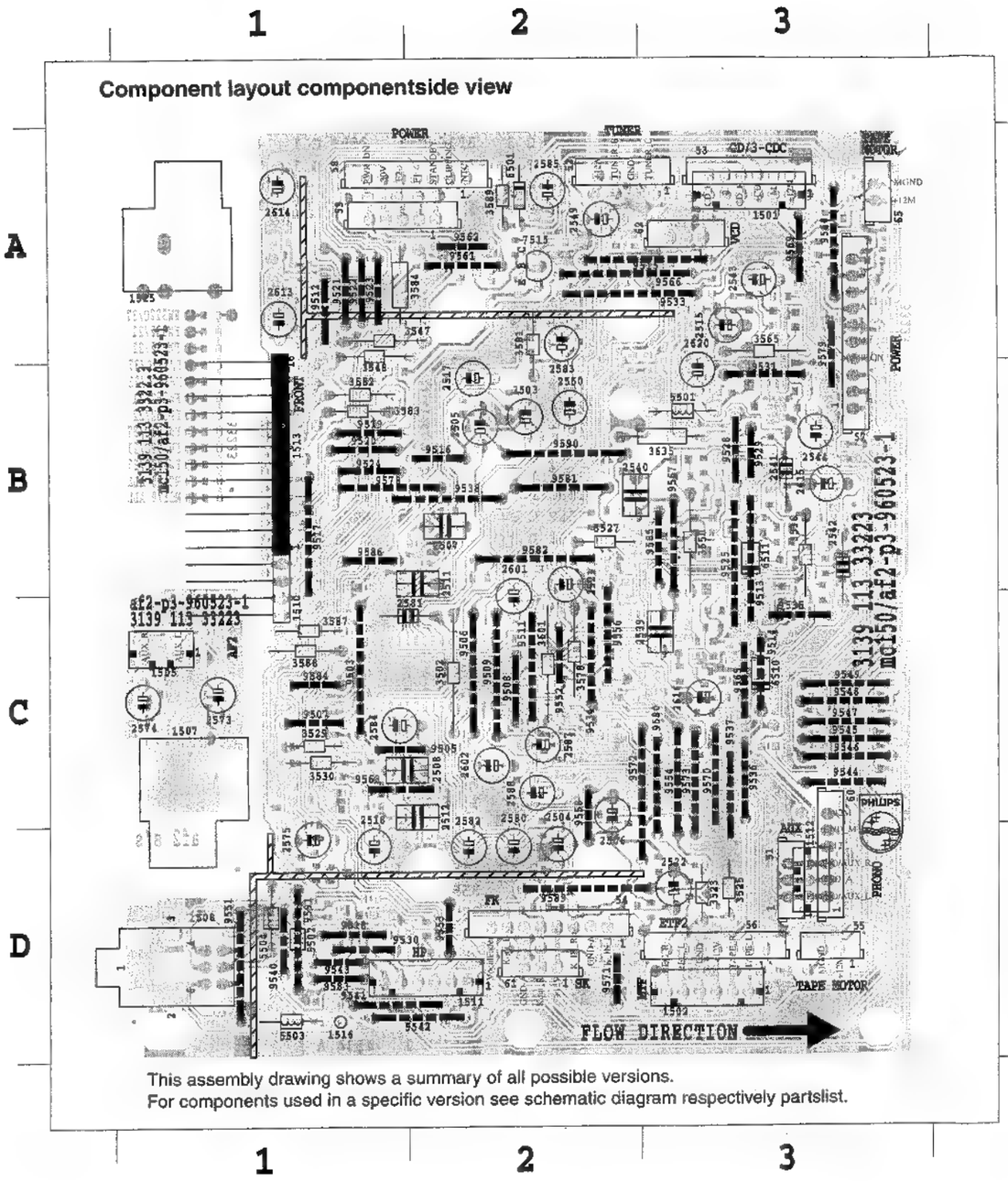
12 - 2

AF CIRCUIT



Item No.	Model/Version	12NC (3139 118 xxxxx)	Remarks	2507 2508	2611 2612	3563 3564	2613 2614	4576 4577	3591, 3592 3597, 3598 3599, 3600	4529	3575	3523 3524	3589 3588 6501	3601 3602	3583 3594	3595 3596	3659 3660	3631 3632	3604 3602	3571 3572	2584	2577	2579
				LEGEND : ( ) NOT USED ( ) USED SHOWN IN SCHEMATICS					Item Marked " * "														
4581	FW322C/37	85150	4W, NON-IS, NK,MTF	68n	47p	120k	-	OR	-	-	2R2	39k	-	12k	22k	12k	15k	3k9	120k	68k	100nF	-	-
4582	FW333/11	88850	12W, IS, SK, MTF	100n	10p	330k	-	OR	-	-	2R2	39k	-	12k	22k	12k	15k	3k9	120k	68k	100nF	-	22nF
4583	FW332/22	88860	12W, IS, NK, MTF	100n	10p	330k	-	OR	-	-	2R2	39k	-	12k	22k	12k	15k	100R	120k	68k	100nF	-	22nF
4584	FW352C/37	85160	12W, IS, NK, MTF	100n	10p	330k	-	OR	-	-	2R2	39k	-	12k	22k	12k	15k	100R	120k	68k	100nF	-	22nF
4585	FW352C/21	88900	12W, IS, SK, MTF	100n	10p	330k	-	OR	-	-	2R2	39k	-	12k	22k	12k	15k	100R	120k	68k	100nF	-	22nF
4586	FW362/21	88930	12W, IS, FK, ETF-2	-	10p	330k	-	OR	-	-	2R2	56k	✓	10R	5k6	18k	8k2	100R	120k	68k	100nF	-	-
	FW372C/21		18W, IS, FK, ETF-2																				
4587	FW362/22	88940	12W, IS, NK, ETF-2	-	10p	330k	-	OR	-	-	2R2	56k	✓	10R	5k6	18k	8k2	100R	120k	68k	100nF	-	-
	FW372C/22		18W, IS, NK, ETF-2																				
4588	FW391C/37	89330	100W, NON-IS, NK, MTF	220n	47p	120k	-	OR	-	-	2R2	47k	-	2k7	5k6	2k7	4k7	560R	82k	82k	100nF	-	-
4589	FW392C/21	85210	100W, IS, SK, MTF	220n	22p	220k	-	OR	-	-	2R2	47k	-	2k7	5k6	2k7	4k7	560R	82k	82k	100nF	100nF	22nF
4590	FW392C/37	85200	100W, IS, NK, MTF	220n	22p	220k	-	OR	-	-	2R2	47k	-	2k7	5k6	2k7	4k7	560R	82k	82k	100nF	100nF	22nF
4591	MC150 ALL VERSION	88810	12W, IS, NK, ETF-2	100n	22p	220k	10nF/50V	-	4R7	OR	-	180k	✓	2k7	6k8	3k3	8k2	47R	82k	82k	100nF	-	-
4592	MC170 ALL VERSION	85080	70W, IS, NK, ETF-2	200n	22p	250k	10nF/50V	-	4R7	OR	-	180k	✓	2k7	5k6	3k3	8k2	560R	82k	82k	100nF	-	-
	AS668C/AS668C	89420	18W, IS, SK, MTF	100n	22p	330k	-	OR	-	-	2R2	39k	✓	12k	22k	12k	15k	100R	68k	-	220nF	100nF	22nF
	AS760C/AS760C	89710	70W, IS, SK, MTF	100n	22p	330k	-	OR	-	-	2R2	39k	✓	12k	22k	12k	15k	100R	68k	-	220nF	100nF	22nF

Component layout componentside view



This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

51 D 3	2613 A 1	9531 B 3
52 A 2	2614 A 1	9533 A 2
53 A 3	2615 B 3	9534 C 2
54 D 2	2616 C 3	9535 C 3
[illegible] D 3	2620 B 3	9536 C 3
56 D 3	3502 C 2	9537 C 3
57 A 3	3523 D 3	9538 B 2
58 A 2	3525 D 3	9540 D 1
59 A 1	3527 B 2	9541 D 1
60 D 3	3529 C 1	9542 D 2
61 D 2	3530 C 1	9543 D 1
62 A 3	3536 B 3	9544 C 3
65 A 3	3547 A 1	9545 C 3
1501 A 3	3548 A 1	9546 C 3
1502 D 3	3550 B 3	9547 C 3
1505 C 1	3565 A 3	9548 C 3
1507 C 1	3578 C 2	9549 C 3
1508 D 1	3581 A 2	9551 D 1
1510 B 1	3582 B 1	9552 C 2
1511 D 2	3583 B 1	9553 D 2
1512 D 3	3584 A 1	9554 C 3
1513 B 1	3587 C 1	9556 C 2
1515 A 1	3588 C 1	9558 C 2
1516 D 1	3589 A 2	9560 A 3
2503 B 2	3601 C 2	9561 A 2
2504 D 2	3635 B 3	9562 A 2
2505 B 2	5501 B 3	9563 C 1
2506 C 2	5502 D 1	9565 C 3
2507 B 2	5503 D 1	9566 A 2
2508 C 1	5504 D 1	9567 B 3
2511 B 2	6501 A 2	9569 A 3
2512 C 2	6510 C 3	9570 C 3
2515 A 3	6511 B 3	9571 D 2
2517 B 2	7515 A 2	9572 C 2
2518 D 1	9503 C 1	9573 C 3
2521 B 2	9505 C 1	9578 B 1
2522 D 3	9506 C 2	9579 A 3
2539 C 3	9507 C 1	9580 C 3
2540 B 2	9508 C 2	9581 B 2
2541 B 3	9509 C 2	9582 B 2
2542 B 3	9511 C 2	9583 D 1
2543 A 3	9512 A 1	9584 C 1
2544 B 3	9513 B 3	9585 B 3
2549 A 2	9514 C 3	9586 B 1
2550 B 2	9515 A 3	9589 D 2
2573 C 1	9516 B 2	9590 B 2
2574 C 1	9517 B 1	9591 D 1
2575 D 1	9518 D 1	
2580 D 2	9519 B 1	
2581 C 1	9520 B 1	
2582 D 2	9521 A 1	
2583 A 2	9522 A 1	
2584 C 1	9523 A 1	
2585 A 2	9524 B 1	
2587 C 2	9525 B 3	
2588 C 2	9528 B 3	
2601 C 2	9529 B 3	
2602 C 2	9530 D 1	

12 - 3

Voltage Assignments:

+CD	5V
CD_STBY	0V (CD stop)
	2.3V (CD play)
REF	4.2V
HPREF	+6V
HP_SENSE	4.5V
+12, +12A, +12M	12V

CONNECTOR 1510
Measured in CD Play mode, unless otherwise stated.

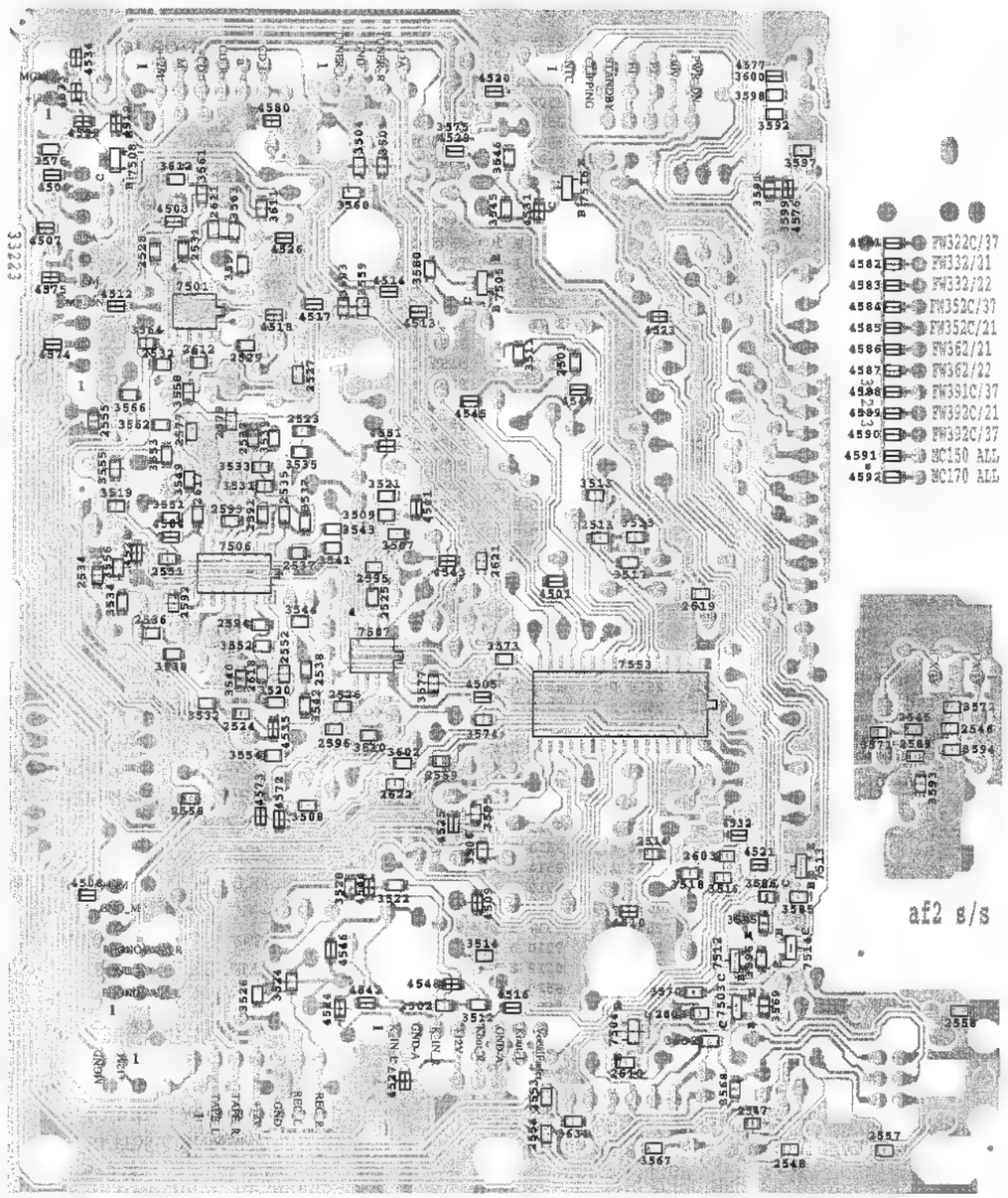
1	SA	N.C.
2	NTC	5V
3	SoClipping	5V
4	VocalFader	4.5V
5	Standby	0V (Standby)
		5V (on)
6	AmOn	0V (standby)
		3.8V (on)
7	PowerDown	8.15
8	CDstandby	0V (CD stop)
		2.3V (CD plsy)
9	MUTE	0V (CD stop)
		0.75V (CD play, Tuner)
		0.75V (Tape, AUX)
10	I²CDATA	5V
11	I²CCIK	5V
12	DGND	0V
13	+D	5.6V
14	-Vkk	-30V
15	F2	6V AC
16	F1	6V AC

SIGNAL MAPPING

+12	B2,J13	I2C_CLK	H11,L3
+12A	G10,J13,J19,K14	I2C_DATA	H12,L3
+12M	B2,H4,I19	K_IN_L	F2
+12V	F2	K_IN_R	F2
+5.6	J14	K_OUT_L	G2
+5.6V	A21,B21,J19,M3	K_OUT_R	F2
+9V	G11,H8	L	H19
-30V	H4,M3,L19	MUTE	C21,L3
AMP_ON	I19,K3	NTC	J3,L19
AUX_L	J8	PHONO/AUX_L	A2
AUX_R	J8	PHOHO/AUX_R	B2
CD_L	D4	PWR_DWN	K3,L19
CD_R	E4	R	I19
CD_STBY	B21,L3	R_AUDIO	H18
CLIPPING	K3,L19	REC_L	I4
F1	M5,L19	REC_R	I4
F2	L5,L19	REF	B8,G6,G8
GND_A	A2	SA_L	H4
GND_M	B2	SA_R	H5,J3
HP_SENSE	G17,K5	STANDBY	K3,L19
HPREF	B17,C13,D17,F13,F17,H15	TAPE_L	D4
VOCAL RADER	G2,K3	TAPE_R	E4

12 - 4

Component layout copperside view



This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

2501 B 2	3509 B 2	3577 C 2	4551 B 2
2502 D 2	3510 C 2	3580 A 2	4572 C 3
2513 B 2	3511 B 2	3585 C 1	4573 C 3
2514 C 1	3512 D 2	3586 C 1	4574 B 3
2523 B 3	3513 B 2	3591 A 1	4575 A 3
2524 C 3	3514 D 2	3592 A 1	4576 A 1
2525 B 2	3515 B 2	3593 C 1	4577 A 1
2526 C 3	3516 C 1	3594 C 1	4580 A 3
2527 B 3	3517 B 2	3595 D 1	4581 A 1
2528 A 3	3518 C 1	3596 D 1	4582 A 1
2529 B 3	3519 B 3	3597 A 1	4583 A 1
2531 A 3	3520 C 3	3598 A 1	4584 B 1
2532 B 3	3521 B 2	3599 A 1	4585 B 1
2533 B 3	3522 C 2	3600 A 1	4586 B 1
2534 B 3	3524 D 3	3602 C 2	4587 B 1
2535 B 3	3526 D 3	3611 A 3	4588 B 1
2536 C 3	3528 C 3	3612 A 3	4589 B 1
2537 B 3	3531 B 3	3631 D 2	4590 B 1
2538 C 3	3532 C 3	3632 D 1	4591 B 1
2545 C 1	3533 B 3	4501 B 2	4592 B 1
2546 C 1	3534 C 3	4503 A 3	7501 B 3
2547 D 1	3535 B 3	4504 B 3	7503 D 1
2548 D 1	3537 B 3	4505 C 2	7504 D 2
2551 B 3	3538 C 3	4506 A 3	7505 A 2
2552 C 3	3539 B 3	4507 A 3	7506 B 3
2553 D 2	3540 C 3	4508 C 3	7507 C 2
2554 D 2	3541 B 3	4509 D 2	7508 A 3
2555 B 3	3542 C 3	4510 D 2	7512 D 1
2556 C 3	3543 B 3	4512 B 3	7513 C 1
2557 D 1	3544 C 3	4513 B 2	7514 D 1
2558 D 1	3545 A 2	4514 A 2	7516 A 2
2559 C 2	3546 A 2	4516 D 2	7553 C 2
2577 B 3	3549 B 3	4517 B 3	
2579 B 3	3551 B 3	4518 B 3	
2589 C 1	3552 C 3	4519 A 3	
2591 B 3	3553 B 3	4520 A 2	
2592 C 3	3554 C 3	4521 C 1	
2593 B 3	3555 B 3	4522 A 3	
2594 C 3	3556 B 3	4523 B 1	
2595 B 2	3557 A 3	4524 D 3	
2596 C 3	3558 B 3	4525 C 2	
2603 C 1	3559 B 2	4526 A 3	
2609 D 1	3560 A 3	4527 D 2	
2610 D 2	3561 A 3	4528 B 3	
2611 A 3	3562 B 3	4529 A 2	
2612 B 3	3563 A 3	4531 A 2	
2617 B 3	3564 B 3	4532 C 1	
2618 C 3	3566 B 3	4533 A 3	
2619 B 1	3567 D 1	4534 A 3	
2621 B 2	3568 D 1	4535 C 3	
2622 C 2	3569 D 1	4541 B 2	
3501 A 2	3570 D 1	4542 D 2	
3503 B 3	3571 C 1	4543 B 2	
3504 A 2	3572 C 1	4544 C 2	
3505 C 2	3573 C 2	4545 B 2	
3506 C 2	3574 C 2	4546 D 3	
3507 B 2	3575 A 2	4547 B 2	
3508 C 3	3576 A 3	4548 D 2	

ELECTRICAL PARTSLIST AF BOARD

MISCELLANEOUS

1508	4822 267 40898	Headphone socket

CAPACITORS

2501	4822 122 33336	8.2nF10%X7R 50V
2502	4822 122 33336	8.2nF10%X7R 50V
2503	4822 124 41407	0.47µF 20% 63V
2504	4822 124 41407	0.47µF 20% 63V
2505	4822 124 40746	0.22µF20% 63V
2506	4822 124 40746	0.22µF20% 63V
2507	5322 121 42386	100nF 5% 63V
2508	5322 121 42386	100nF 5% 63V
2511	4822 121 51252	470nF 5% 63V
2512	4822 121 51252	470nF 5% 63V
2513	4822 122 32646	5.6nF10%X7R 50V
2514	4822 122 32646	5.6nF10%X7R 50V
2515	4822 124 40433	47µF20% 25V
2517	4822 124 41407	0.47µF 20% 63V
2518	4822 124 41407	0.47µF 20% 63V
2521	4822 124 41407	0.47µF 20% 63V
2522	4822 124 41407	0.47µF 20% 63V
2523	4822 122 33177	10nF 20% X7R 50V
2524	4822 122 33177	10nF 20% X7R 50V
2525	5322 122 32531	100pF 5%NP0 50V
2526	5322 122 32531	100pF 5%NP0 50V
2529	5322 122 32654	22nF10%X7R 63V
2531	5322 122 32268	470pF 10% 50V
2532	5322 122 32268	470pF 10% 50V
2533	5322 122 32268	470pF 10% 50V
2534	5322 122 34099	470pF10%X7R 63V
2535	5322 122 33538	150pF 2%NP0 63V
2536	5322 122 33538	150pF 2%NP0 63V
2537	5322 122 32268	470pF 10% 50V
2538	5322 122 32268	470pF 10% 50V
2539	5322 121 42661	330nF 5% 63V
2540	5322 121 42661	330nF 5% 63V
2541	4822 126 12882	100nF+80-20% 50V
2542	4822 126 12882	100nF+80-20% 50V
2543	4822 124 41751	47µF 20% 50V
2544	4822 124 41751	47µF 20% 50V
2547	5322 122 32654	22nF10%X7R 63V
2548	5322 122 32654	22nF10%X7R 63V
2549	4822 124 41407	0.47µF 20% 63V
2550	4822 124 41407	0.47µF 20% 63V
2551	5322 122 31865	1.5nF10%X7R 63V
2552	5322 122 31865	1.5nF10%X7R 63V
2557	5322 122 32654	22nF10%X7R 63V
2558	5322 122 32654	22nF10%X7R 63V
2559	5322 122 32654	22nF10%X7R 63V
2575	4822 124 40246	4.7µF20% 63V
2577	4822 126 13838	100nF Y5V 0805 50V P80M20
2579	5322 122 32654	22nF10%X7R 63V
2580	4822 124 41751	47µF 20% 50V
2581	4822 126 12882	100nF+80-20% 50V
2582	4822 124 41751	47µF 20% 50V
2583	4822 124 81029	100µF20% 25V
2584	4822 124 22263	220µF20% 25V
2587	4822 124 41407	0.47µF 20% 63V
2588	4822 124 41407	0.47µF 20% 63V

CAPACITORS

2591	5322 122 32268	470pF 10% 50V
2592	5322 122 32268	470pF 10% 50V
2593	5322 122 32268	470pF 10% 50V
2594	5322 122 32268	470pF 10% 50V
2595	5322 122 32268	470pF 10% 50V
2596	5322 122 32268	470pF 10% 50V
2601	4822 124 41407	0.47µF 20% 63V
2602	4822 124 41407	0.47µF 20% 63V
2609	5322 122 32531	100pF 5%NP0 50V
2610	5322 122 32531	100pF 5%NP0 50V
2611	5322 122 32658	22pF 5% 50V
2612	5322 122 32658	22pF 5% 50V
2615	4822 124 40242	1µF20% 63V
2616	4822 124 40242	1µF20% 63V
2617	4822 122 33575	220pF 5%NPO 50V
2618	4822 122 33575	220pF 5%NPO 50V
2619	5322 122 32654	22nF10%X7R 63V
2620	4822 124 40433	47µF20% 25V

RESISTORS

3501	4822 117 11383	12k 1% 0.1W
3502	4822 116 52238	12k 5% 0.5W
3503	4822 051 20223	22k 5% 0.1W
3504	4822 051 20223	22k 5% 0.1W
3505	4822 117 11383	12k 1% 0.1W
3506	4822 117 11383	12k 1% 0.1W
3507	4822 051 20153	15k 5% 0.1W
3508	4822 051 20153	15k 5% 0.1W
3509	4822 051 20473	47k 5% 0.1W
3510	4822 051 20473	47k 5% 0.1W
3511	4822 051 20223	22k 5% 0.1W
3512	4822 051 20223	22k 5% 0.1W
3513	4822 117 11449	2k2 1% 0.1W
3514	4822 117 11449	2k2 1% 0.1W
3515	4822 051 20472	4k7 5% 0.1W
3516	4822 051 20472	4k7 5% 0.1W
3517	4822 051 20472	4k7 5% 0.1W
3518	4822 051 20472	4k7 5% 0.1W
3519	4822 117 10833	10k 1% 0.1W
3520	4822 117 10833	10k 1% 0.1W
3521	4822 051 20473	47k 5% 0.1W
3522	4822 051 20473	47k 5% 0.1W
3523	4822 116 83882	39k 5% 0.5W
3524	4822 051 20393	39k 5% 0.1W
3527	4822 116 52284	47k 5% 0.5W
3528	4822 051 20473	47k 5% 0.1W
3531	4822 051 20473	47k 5% 0.1W
3532	4822 051 20473	47k 5% 0.1W
3533	4822 051 20473	47k 5% 0.1W
3534	4822 051 20473	47k 5% 0.1W
3535	4822 051 20104	100k 5% 0.1W
3536	4822 116 52234	100k 5% 0.5W
3537	4822 051 20473	47k 5% 0.1W
3538	4822 051 20473	47k 5% 0.1W
3539	4822 051 20473	47k 5% 0.1W
3540	4822 051 20473	47k 5% 0.1W
3541	4822 051 20223	22k 5% 0.1W
3542	4822 051 20223	22k 5% 0.1W

ELECTRICAL PARTSLIST AF BOARD

RESISTORS

3543	4822 051 20223	22k 5% 0.1W
3544	4822 051 20223	22k 5% 0.1W
3545	4822 051 20562	5k6 5% 0.1W
3546	4822 051 20562	5k6 5% 0.1W
3547	4822 116 83864	10k 5% 0.5W
3548	4822 116 52256	2k2 5% 0.5W
3549	4822 051 20223	22k 5% 0.1W
3550	4822 116 52257	22k 5% 0.5W
3551	4822 051 20333	33k 5% 0.1W
3552	4822 051 20333	33k 5% 0.1W
3553	4822 051 20562	5k6 5% 0.1W
3554	4822 051 20562	5k6 5% 0.1W
3555	4822 051 20182	1k80 5% 0.1W
3556	4822 051 20182	1k80 5% 0.1W
3557	4822 051 20273	27k 5% 0.1W
3558	4822 051 20273	27k 5% 0.1W
3559	4822 051 20153	15k 5% 0.1W
3560	4822 051 20153	15k 5% 0.1W
3561	4822 051 20273	27k 5% 0.1W
3562	4822 051 20273	27k 5% 0.1W
3563	4822 051 20334	330k 5% 0.1W
3564	4822 051 20334	330k 5% 0.1W
3565	4822 116 52195	47R 5% 0.5W
3566	4822 051 20479	47R 5% 0.1W
3567	4822 051 20689	68R 5% 0.1W
3568	4822 051 20689	68R 5% 0.1W
3569	4822 051 10102	1k 2% 0.25W
3570	4822 051 10102	1k 2% 0.25W
3573	4822 051 20822	8k2 5% 0.1W
3574	4822 051 20822	8k2 5% 0.1W
3575	4822 051 20228	2R2 5% 0.1W
3576	4822 051 20229	22R 5% 0.1W
3577	4822 051 10102	1k 2% 0.25W
3578	4822 050 11002	1k 1% 0.4W
3580	4822 051 20272	2k7 5% 0.1W
3581	4822 116 83864	10k 5% 0.5W
3582	4822 050 11002	1k 1% 0.4W
3583	4822 050 11002	1k 1% 0.4W
3584	4822 050 24705	4M7 1% 0.6W
3585	4822 051 20472	4k7 5% 0.1W
3586	4822 051 10102	1k 2% 0.25W
3589	4822 116 52289	5k6 5% 0.5W
3595	4822 051 20562	5k6 5% 0.1W
3601	4822 116 52297	68k 5% 0.5W
3602	4822 051 20683	68k 5% 0.1W
3611	4822 051 20392	3k90 5% 0.1W
3612	4822 051 20472	4k7 5% 0.1W
3631	4822 051 20101	100R 5% 0.1W
3632	4822 051 20101	100R 5% 0.1W
3635	4822 052 10109	10R 5% 0.33W

CHIP JUMPER

4503	4822 051 20008	0R Jumper
4504	4822 051 20008	0R Jumper
4505	4822 051 20008	0R Jumper
4506	4822 051 20008	0R Jumper
4507	4822 051 20008	0R Jumper
4508	4822 051 20008	0R Jumper

CHIP JUMPER

4509	4822 051 20008	0R Jumper
4510	4822 051 20008	0R Jumper
4511	4822 051 20008	0R Jumper
4512	4822 051 20008	0R Jumper
4513	4822 051 20008	0R Jumper
4514	4822 051 20008	0R Jumper
4516	4822 051 20008	0R Jumper
4517	4822 051 20008	0R Jumper
4518	4822 051 20008	0R Jumper
4519	4822 051 20008	0R Jumper
4520	4822 051 20008	0R Jumper
4521	4822 051 20008	0R Jumper
4522	4822 051 20008	0R Jumper
4523	4822 051 20008	0R Jumper
4524	4822 051 20008	0R Jumper
4525	4822 051 20008	0R Jumper
4526	4822 051 20008	0R Jumper
4528	4822 051 20008	0R Jumper
4531	4822 051 20008	0R Jumper
4532	4822 051 20008	0R Jumper
4533	4822 051 20008	0R Jumper
4534	4822 051 20008	0R Jumper
4535	4822 051 20008	0R Jumper
4545	4822 051 20008	0R Jumper
4546	4822 051 20008	0R Jumper
4551	4822 051 20008	0R Jumper
4569	4822 051 20008	0R Jumper
4572	4822 051 20008	0R Jumper
4573	4822 051 20008	0R Jumper
4574	4822 051 20008	0R Jumper
4575	4822 051 20008	0R Jumper
4576	4822 051 20008	0R Jumper
4577	4822 051 20008	0R Jumper
4580	4822 051 20008	0R Jumper

COILS & DIODES

5501	4822 156 21721	COIL 2.2µH
5502	4822 156 21721	COIL 2.2µH
5503	4822 156 21721	COIL 2.2µH
5504	4822 156 21721	COIL 2.2µH
6501	4822 130 30862	BZX79-C9V1

INTEGRATED CIRCUITS

7501	4822 209 31378	NJM4556AM
7506	4822 209 63709	LM324D
7507	4822 209 83357	NJM4560M
7553	4822 209 33652	TRA6321T/V1

TRANSISTORS

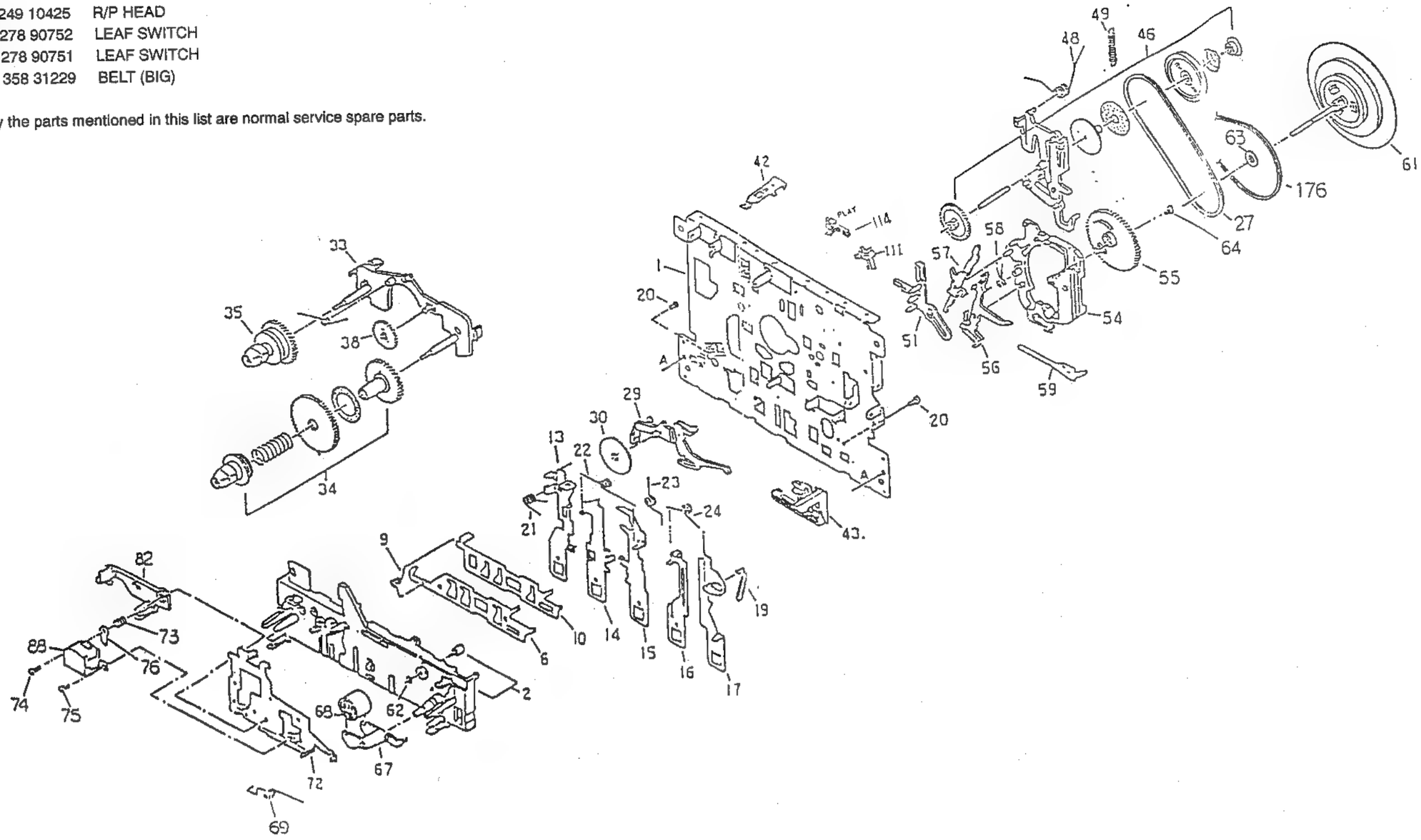
7503	4822 130 42615	BC817-40
7504	4822 130 42615	BC817-40
7505	5322 130 42136	BC848C
7508	5322 130 42136	BC848C
7512	5322 130 42136	BC848C
7513	5322 130 42136	BC848C
7514	5322 130 41983	BC858B
7515	4822 130 41327	BC327-40
7516	5322 130 42136	BC848C

Exploded View-Play(Mech A)Mechanism

MECHANCISM A - PLAYBACK DECK

27	4822 358 31231	BELT DRIVING
43	4822 403 30811	LEVER EJECT
67	4822 402 61418	ARM PINCH
68	4822 528 70785	ROLLER PINCH
88	4822 249 10425	R/P HEAD
111	4822 278 90752	LEAF SWITCH
114	4822 278 90751	LEAF SWITCH
176	4822 358 31229	BELT (BIG)

Note: Only the parts mentioned in this list are normal service spare parts.

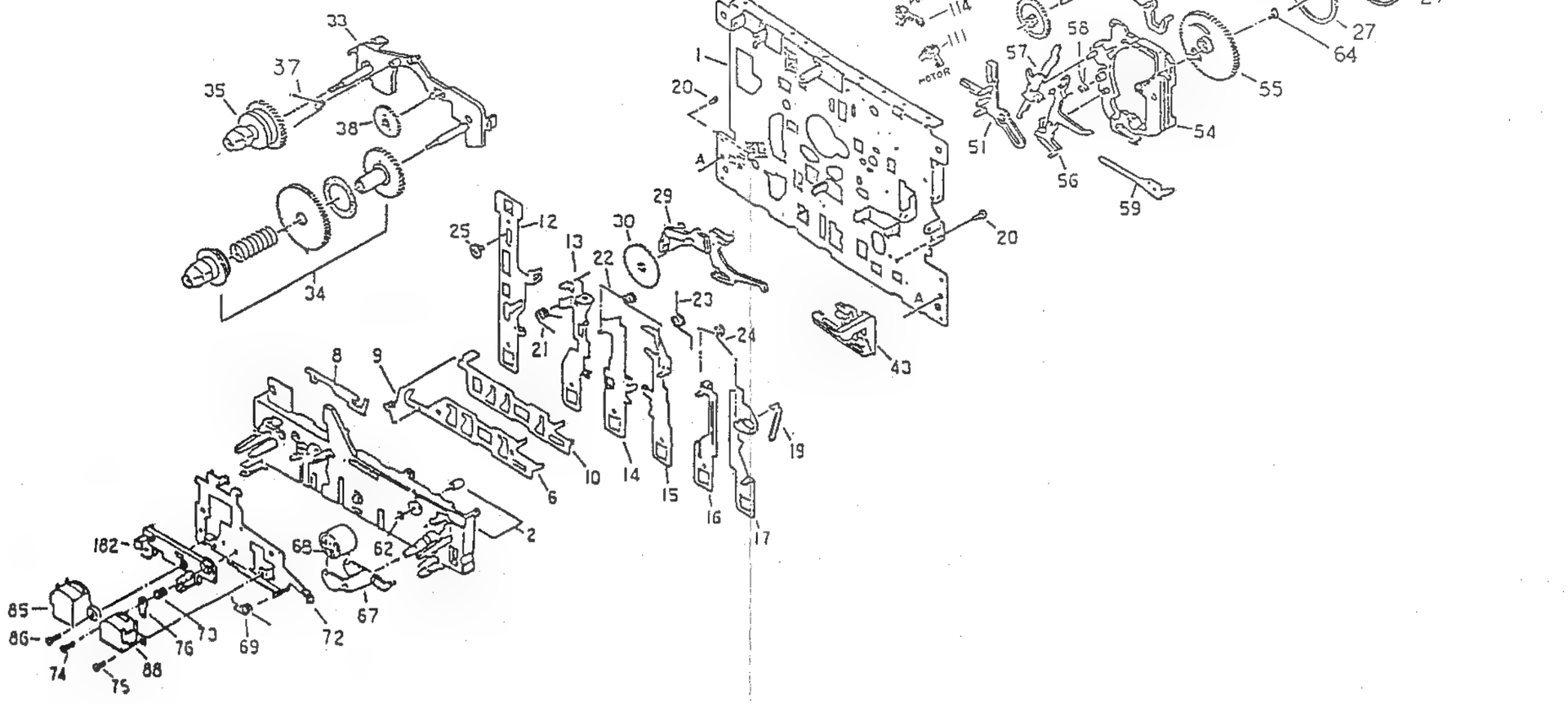


Exploded View-Rec/PB(Mech B)Mechanism

MECHANISM B - R/P DECK

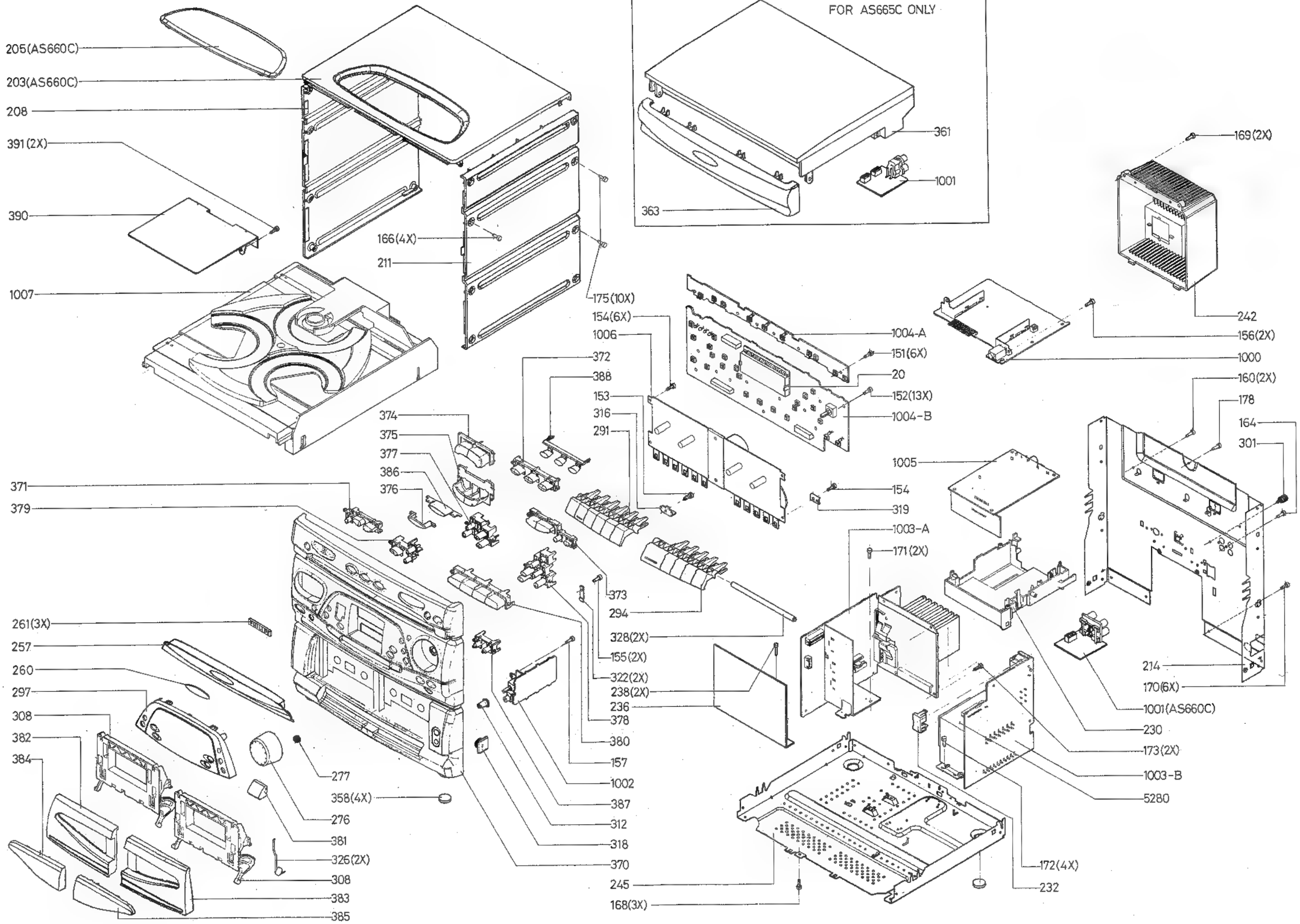
27	4822 358 31231	BELT (SMALL)
43	4822 403 30811	LEVER EJECT
67	4822 402 61418	ARM PINCH
68	4822 528 70785	ARM PINCH ROLLER
85	4822 249 40276	ERASE HEAD
88	4822 249 10425	R/P HEAD
111	4822 278 90752	LEAF SWITCH
114	4822 278 90751	LEAF SWITCH
1770	4822 691 10479	Tape Deck YSW 27-500

Note: Only the parts mentioned in this list are normal service spare parts.



13 - 5

EXPLODED VIEW OF SET



MECHANICAL PARTSLIST

203	4822 442 00682	Top Cover /AS660C
205	4822 450 10204	Cdc Window
208	4822 426 10339	Side Plate Left
211	4822 426 10341	Side Plate Right
257	4822 442 00603	Cover tray 3-cdc
276	4822 410 10772	Volume knob
291	4822 410 10773	Button set left /AS660C
291	4822 410 10818	Button cassette left /AS665C
294	4822 410 10774	Button right /AS660C
294	4822 410 10819	Button cassette right /AS665C
297	4822 450 10205	Display window /AS660C
297	4822 450 10213	Display window /AS665C
308	4822 443 10173	Door cassette
312	4822 410 10775	Mic level knob
318	4822 529 10322	Damper assy
370	4822 459 04352	Cabinet front
371	4822 410 10776	Button program
372	4822 410 10777	Button disc
373	4822 410 10778	Button open
374	4822 410 10779	Button jazz/rock
375	4822 410 10781	Button class/pop
376	4822 450 10206	DSC lens
377	4822 410 10782	Button prog/tuner
378	4822 410 10783	Button clock/preset
379	4822 410 10784	Button power
380	4822 410 10785	Button source
381	4822 410 10786	Cover deck button
382	4822 443 10448	Cassette door A
383	4822 443 10449	Cassette door B
384	4822 450 10207	Lens cassette door A
385	4822 450 10208	Lens cassette door B
386	4822 466 11341	DSC light guide
387	4822 410 10787	Button dbb/Incredible sound
388	4822 466 11342	Light guide CDC

MISCELLANEOUS

	4822 219 10107	Remote control
	4822 303 50063	FM aerial
	4822 321 10249	Mains cord
	4822 445 10585	Loudspeaker box 1X
	4822 736 14684	Instruction for use
5280	4822 146 10492	Transformer

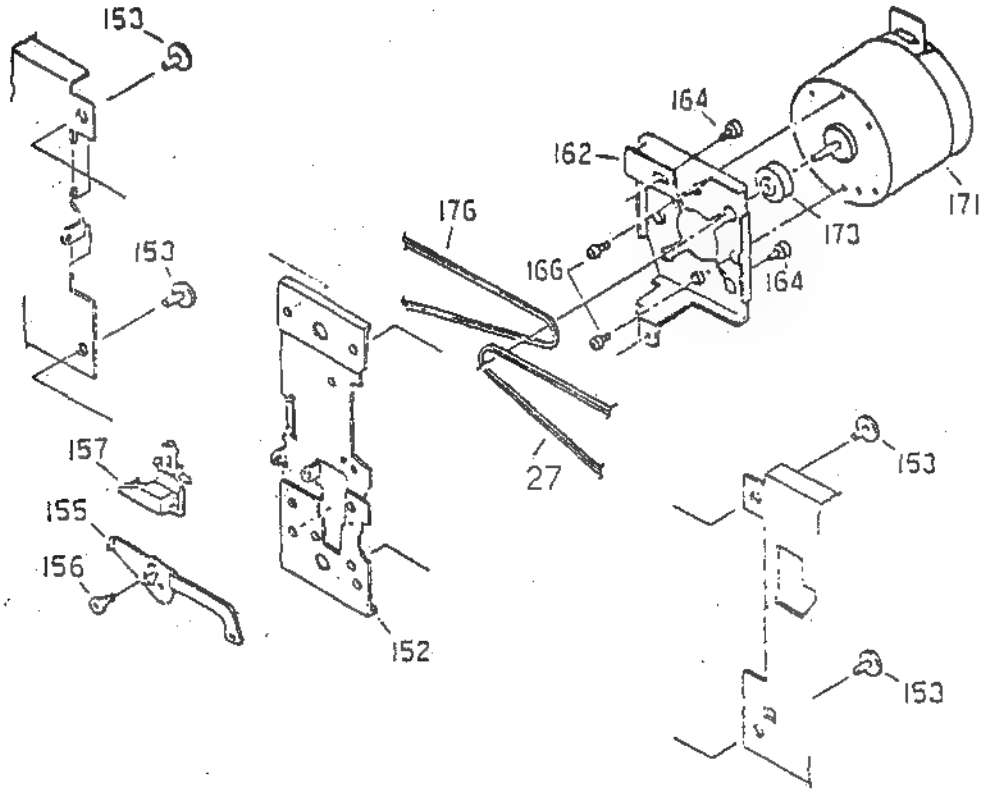
LIST OF SCREWS

151	SCR PAN TORX TAP ST ZN BK 3X10
152	SCR PAN TORX TAP ST ZN BK 3X10
153	SCR PAN TORX TAP ST ZN BK 3X10
154	SCR PAN TORX TAP ST ZN BK 3X10
155	SCR PAN TORX TAP ST ZN BK 3X10
156	SCR PAN TORX TAP ST ZN BK 3X10
157	SCR PAN TORX TAP ST ZN BK 3X10
158	SCR PAN TORX TAP ST ZN BK 3X10
160	SCR PAN TORX TAP ST ZN BK 3X10
161	SCR PAN TORX TAP ST ZN BK 3X12
162	SCR PAN TORX TAP ST ZN BK 3X12
163	SCR PAN TORX TAP ST ZN BK 3X12
164	SCR PAN TORX TAP ST ZN BK 3X12
165	SCR PAN TORX TAP ST ZN BK 3X12
166	SCR PAN TORX TAP ST ZN BK 3X12
167	SCR PAN TORX TAP ST ZN BK 3X20
168	SCR PAN TORX TAP ST ZN M3X10
169	SCR PAN TORX TAP ST ZN M3X6
170	SCR WASH TORX TAP ST ZN 3X6
171	SCR WASH TORX TAP ST ZN 3X6
172	SCR WASH TORX TAP ST ZN 3X6
173	SCR WASH TORX TAP ST ZN 3X6
174	SCR PAN TORX TAP ST ZN M3X10
175	SCR PAN TORX TAP ST ZN M3X15
178	SCR PAN TORX TAP ST ZN M3X10
234	SCR PAN TORX TAP ST ZN BK 3X12
238	SCR WASH TORX TAP ST ZN 3X6
240	SCR WASH TORX TAP ST ZN 3X6

FOR AS665C/41 ONLY

365	PIN ZN STANDARD PASS YE
366	SCR PAN TORX TAP ST ZN 2.9X13
160	SCR PAN TORX TAP ST ZN BK 3X12
161	SCR PAN TORX TAP ST ZN BK 3X10

EXPLODED VIEW-TAPE MOTOR MECHANISM



MOTOR ASSY

171	4822 361 21585	MOTOR
173	4822 528 81482	MOTOR PULLEY
176	4822 358 31229	BELT

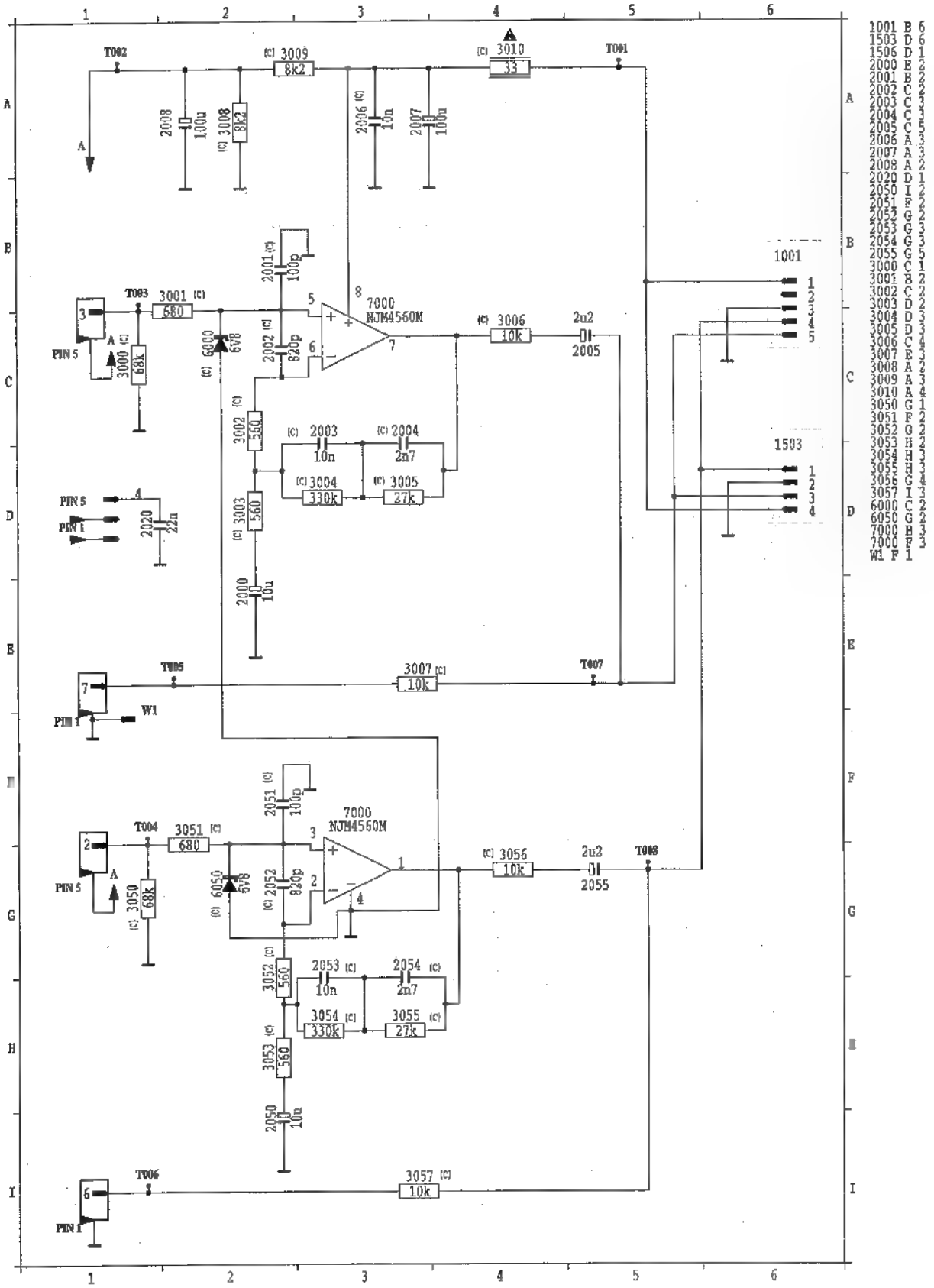
Note: Only the parts mentioned in this list are normal sprare parts.

PHONO BOARD

AS660C/AS760C

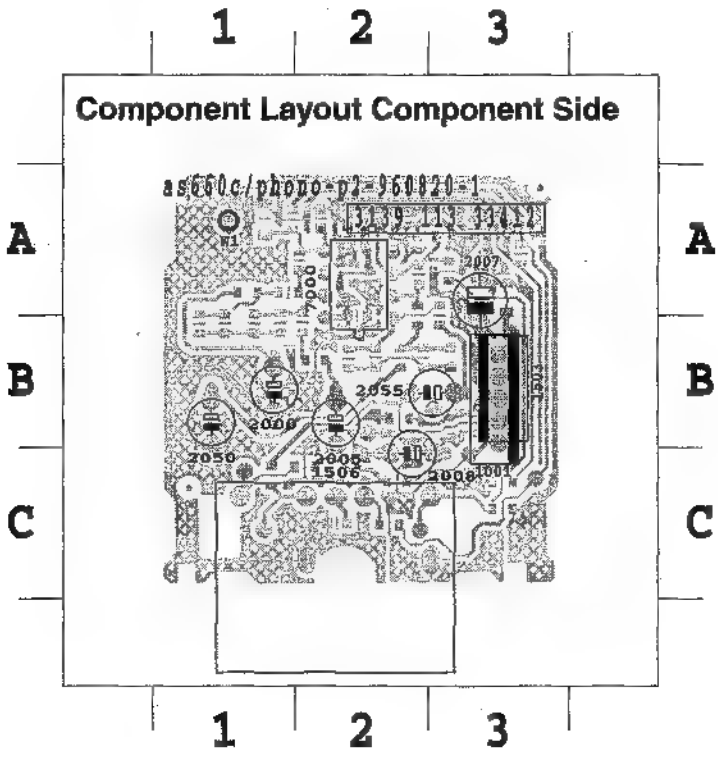
TABLE OF CONTENTS

PHONO BOARD (FOR AS660C/AS760C)

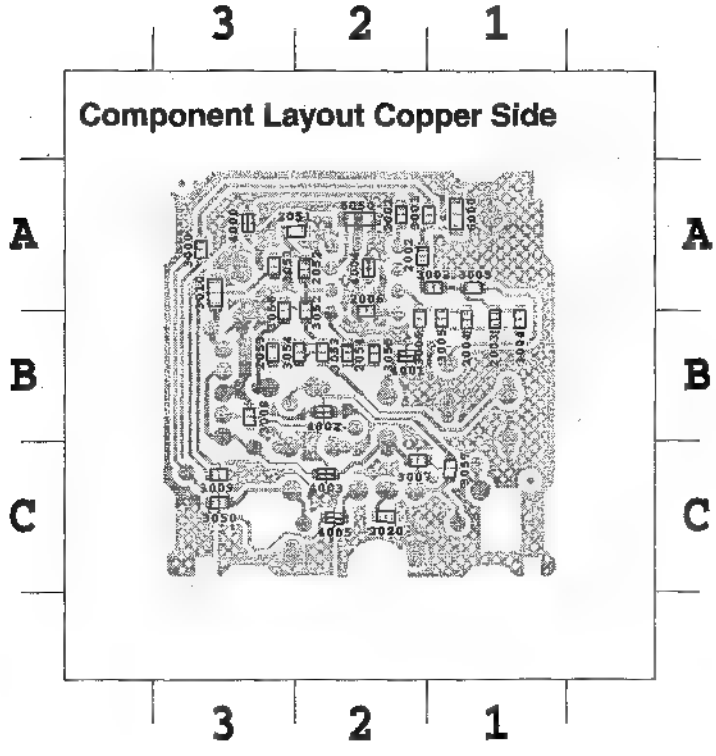


1001 B 6
1503 D 6
1506 D 1
2000 E 2
2001 B 2
2002 C 2
2003 C 3
2004 C 3
2005 C 5
2006 A 3
2007 A 3
2008 A 2
2020 D 1
2050 I 3
2051 F 2
2052 G 2
2053 G 3
2054 G 3
2055 G 5
3000 C 1
3001 B 2
3002 C 2
3003 D 2
3004 D 3
3005 D 3
3006 C 4
3007 E 3
3008 A 2
3009 A 3
3010 A 4
3050 G 1
3051 F 2
3052 G 2
3053 H 2
3054 H 3
3055 H 3
3056 G 4
3057 I 3
6000 C 2
6050 G 2
7000 B 3
7000 F 3
W1 F 1

PHONO BOARD (FOR AS660C/AS760C)



1001 B 3
1503 ■ 3
1506 C 2
2000 B 1
2005 B 2
2007 A 3
2008 C 2
2050 B 1
2055 B 3
7000 A 2
W1 A 1



2001 A 2
2002 A 2
2003 B 1
2004 B 1
2006 B 2
2020 C 2
2051 A 2
2052 A 2
2053 B 3
2054 B 2
3000 A 3
3001 A 1
3002 A 1
3003 A 1
3004 B 1
3005 B 1
3006 B 2
3007 C 2
3008 B 3
3009 C 3
3010 A 3
3050 ■ 3
3051 A 3
3052 A 2
3053 B 2
3054 B 2
3055 B 2
3056 B 3
3057 C 1
4000 A 3
4001 B 2
4002 B 2
4003 C 2
4004 A 2
4005 C 2
6000 A 1
6050 A 2

This assembly drawing shows a summary of all possible verisons.
For components used in ■ specific version see schematic diagram respectively partslist.

ELECTRICAL PARTSLIST PHONO/AUX BOARD

CAPACITORS

2000	4822 124 41579	10µF 20% 50V
2001	5322 122 32531	100pF 5%NP0 50V
2002	4822 122 33806	820pF10%X7R 63V
2003	4822 122 33177	10nF 20% X7R 50V
2004	4822 122 32627	2.7nF10%X7R 50V
2005	4822 124 41576	2.2µF 20% 50V
2006	4822 122 33177	10nF 20% X7R 50V
2007	4822 124 41643	100µF20% 16V
2008	4822 124 41584	100µF 20% 10V
2050	4822 124 41579	10µF 20% 50V
2051	5322 122 32531	100pF 5%NP0 50V
2052	4822 122 33806	820pF10%X7R 63V
2053	4822 122 33177	10nF 20% X7R 50V
2054	4822 122 32627	2.7nF10%X7R 50V
2055	4822 124 41576	2.2µF 20% 50V

RESISTORS

3000	4822 051 20683	68k 5% 0.1W
3001	4822 051 20681	680R 5% 0.1W
3002	4822 051 20561	560R 5% 0.1W
3003	4822 051 20561	560R 5% 0.1W
3004	4822 051 20334	330k 5% 0.1W
3005	4822 051 20273	27k 5% 0.1W
3006	4822 117 10833	10K 1% 0.1W
3007	4822 117 10833	10K 1% 0.1W
3008	4822 051 20822	8k2 5% 0.1W
3009	4822 051 20822	8k2 5% 0.1W
3010	4822 117 12556	33R 5% 125MW.
3050	4822 051 20683	68k 5% 0.1W
3051	4822 051 20681	680R 5% 0.1W
3052	4822 051 20561	560R 5% 0.1W
3053	4822 051 20561	560R 5% 0.1W
3054	4822 051 20334	330k 5% 0.1W
3055	4822 051 20273	27k 5% 0.1W
3056	4822 117 10833	10K 1% 0.1W
3057	4822 117 10833	10K 1% 0.1W

CHIP JUMPER

4000	4822 051 20008	0R Jumper
4001	4822 051 20008	0R Jumper
4002	4822 051 20008	0R Jumper
4003	4822 051 20008	0R Jumper
4004	4822 051 20008	0R Jumper

DIODES & INTEGRATED CIRCUIT

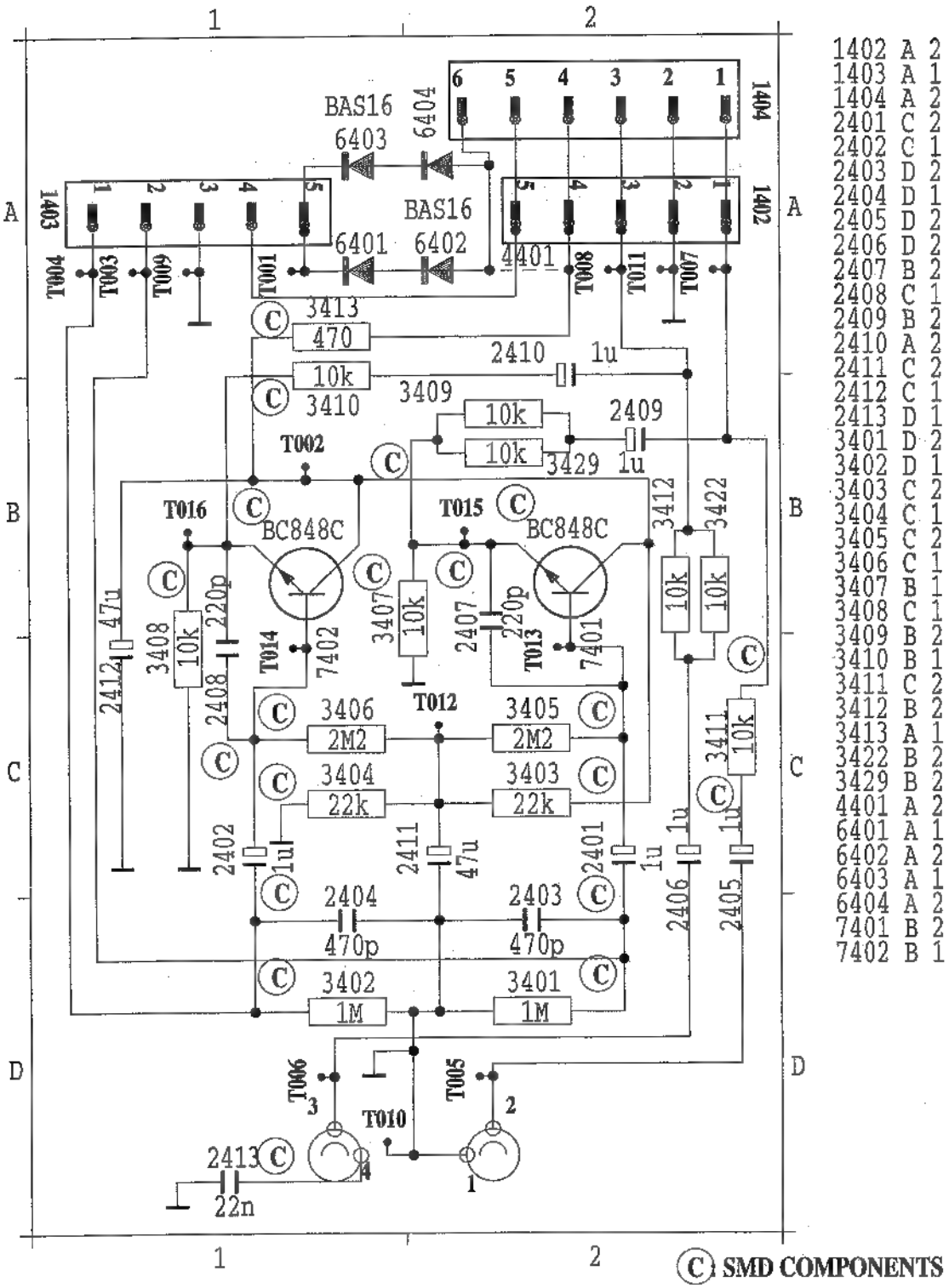
6000	4822 130 81513	BZV55-C6V8
6050	4822 130 81513	BZV55-C6V8
7000	4822 209 83274	NJM4560D

PHONO BOARD

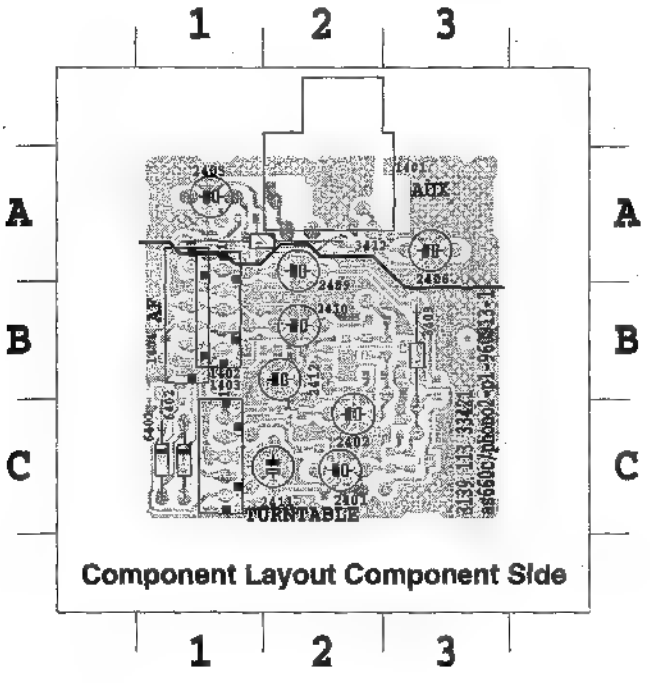
AS665C/AS765C

TABLE OF CONTENTS

PHONO BOARD (FOR AS665C/AS765C)

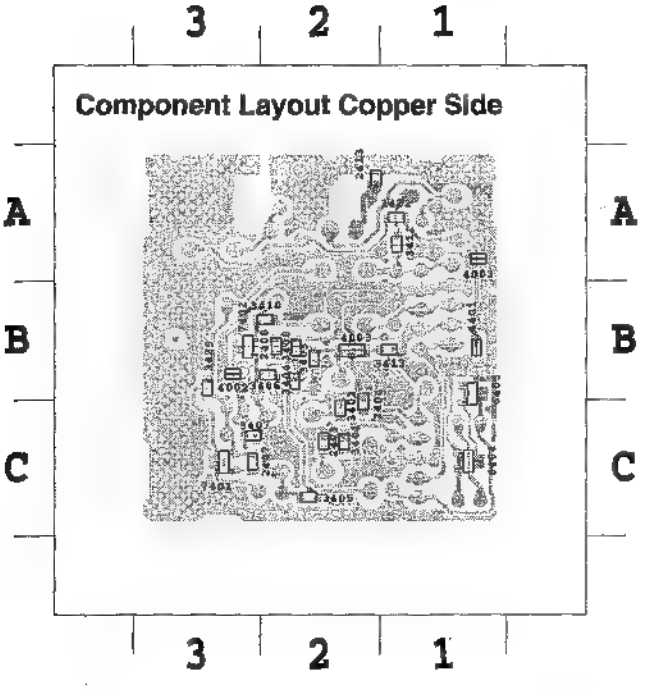


1402	A	2
1403	A	1
1404	A	2
2401	C	2
2402	C	1
2403	D	2
2404	D	1
2405	D	2
2406	D	2
2407	B	2
2408	C	1
2409	B	2
2410	A	2
2411	C	2
2412	C	1
2413	D	1
3401	D	2
3402	D	1
3403	C	2
3404	C	1
3405	C	2
3406	C	1
3407	B	1
3408	C	1
3409	B	2
3410	B	1
3411	C	2
3412	B	2
3413	A	1
3422	B	2
3429	B	2
4401	A	2
6401	A	1
6402	A	2
6403	A	1
6404	A	2
7401	B	2
7402	B	1



Component Layout Component Side

1401 A 2	3409 B 3
1402 B 1	3410 B 2
1403 C 1	3411 A 1
1404 B 1	3412 A 1
2401 C 2	3413 B 1
2402 C 2	3422 A 1
2403 C 2	3429 B 3
2404 C 2	4001 A 1
2405 A 1	4002 B 3
2406 A 3	4003 B 2
2407 C 3	4401 B 1
2408 B 2	6401 C 1
2409 A 2	6402 C 1
2410 B 2	6403 B 1
2411 C 2	6404 C 1
2412 B 2	7401 C 3
2413 A 2	7402 B 3
3401 C 2	
3402 C 2	
3403 B 2	
3404 B 2	
3405 C 2	
3406 B 2	
3407 C 3	
3408 B 2	



Component Layout Copper Side

2403 C 2	7402 B 3
2404 C 2	
2407 C 3	
2408 B 2	
2413 A 2	
3401 C 2	
3402 C 2	
3403 B 2	
3404 B 2	
3405 C 2	
3406 B 2	
3407 C 3	
3408 B 2	
3410 B 2	
3411 A 1	
3413 B 1	
3422 A 1	
3429 B 3	
4001 A 1	
4002 B 3	
4003 B 2	
4401 B 1	
6403 B 1	
6404 C 1	
7401 C 3	

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

ELECTRICAL PARTSLIST PHONO/AUX BOARD

CAPACITORS

2401	4822 124 40242	1µF20% 63V
2402	4822 124 40242	1µF20% 63V
2403	5322 122 32268	470pF 10% 50V
2404	5322 122 32268	470pF 10% 50V
2405	4822 124 40242	1µF20% 63V
2406	4822 124 40242	1µF20% 63V
2407	4822 122 33575	220pF 5%NPO 50V
2408	4822 122 33575	220pF 5%NPO 50V
2409	4822 124 40242	1µF20% 63V
2410	4822 124 40242	1µF20% 63V
2411	4822 124 40433	47µF20% 25V
2412	4822 124 40433	47µF20% 25V

RESISTORS

3401	4822 051 20105	1M 5% 0.1W
3402	4822 051 20105	1M 5% 0.1W
3403	4822 051 20223	22k 5% 0.1W
3404	4822 051 20223	22k 5% 0.1W
3405	4822 051 20225	2M2 5% 0.1W
3406	4822 051 20225	2M2 5% 0.1W
3407	4822 117 10833	10K 1% 0.1W
3408	4822 117 10833	10K 1% 0.1W
3409	4822 051 20473	47k 5% 0.1W
3410	4822 051 20473	47k 5% 0.1W
3411	4822 117 11149	82K 1% 0.1W
3412	4822 117 11149	82K 1% 0.1W
3413	4822 051 20471	470R 5% 0.1W

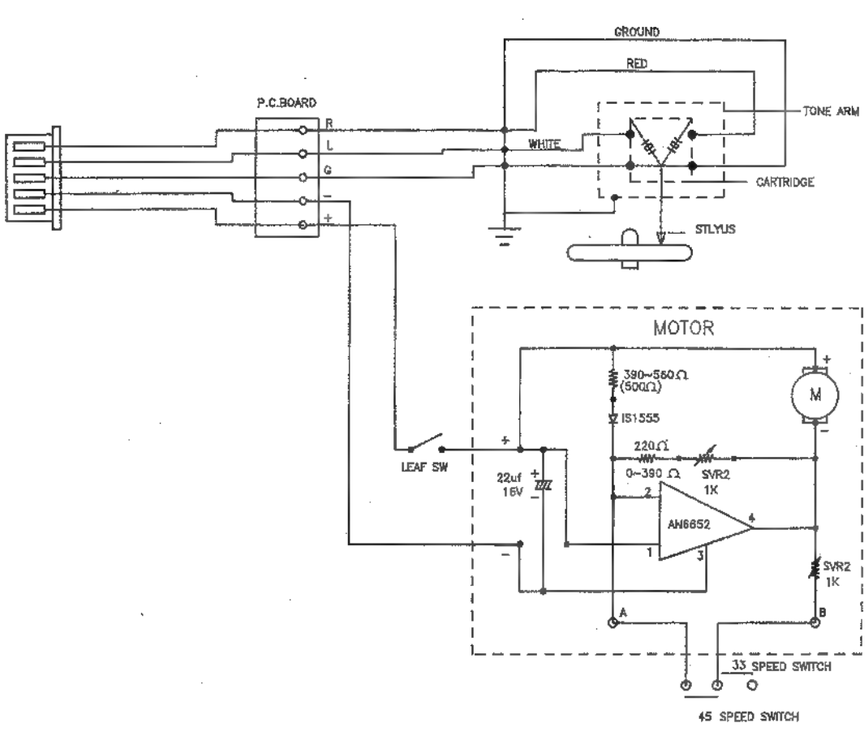
JUMPER

4004	4822 051 10008	0R 5% 0.25W

INTEGRATED CIRCUITS & TRANSISTOR

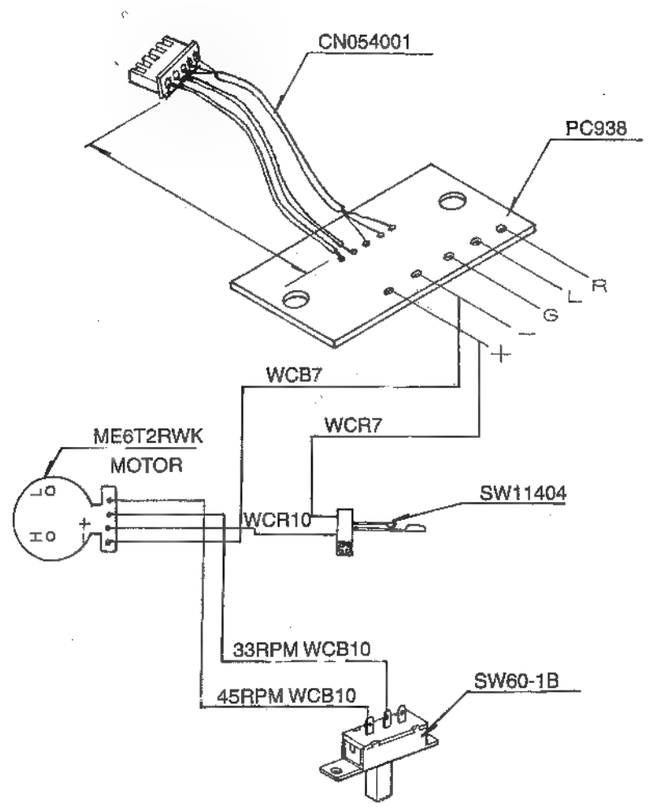
6420	4822 130 81637	PMLL4148L
6421	4822 130 81637	PMLL4148L
7401	5322 130 42136	BC848C
7402	5322 130 42136	BC848C

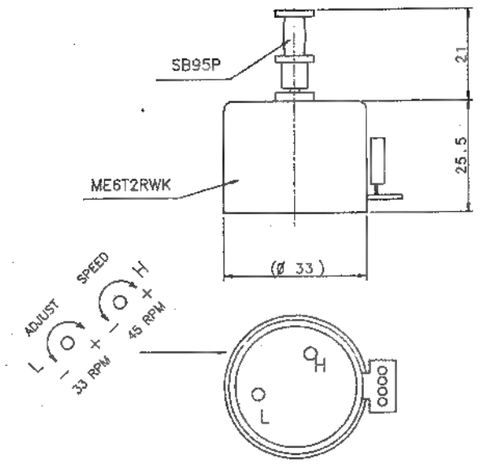
RECORD PLAYER
DL-40



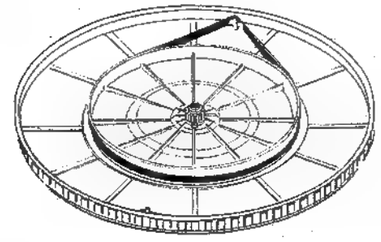
15 - 1

Connection of printed circuit board & motor

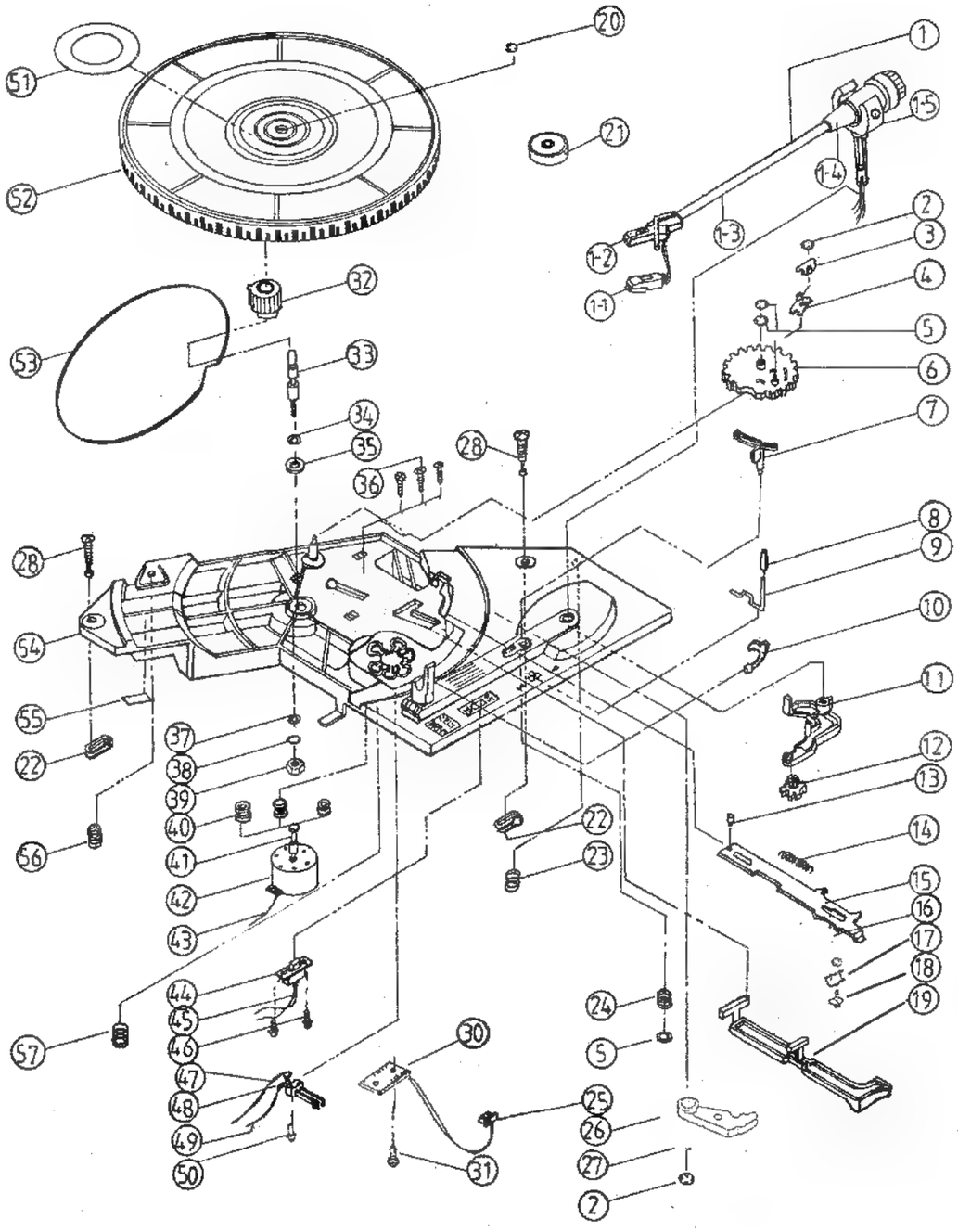




PLACEMENT OF BELT



EXPLODED VIEW OF RECORD PLAYER DL-40

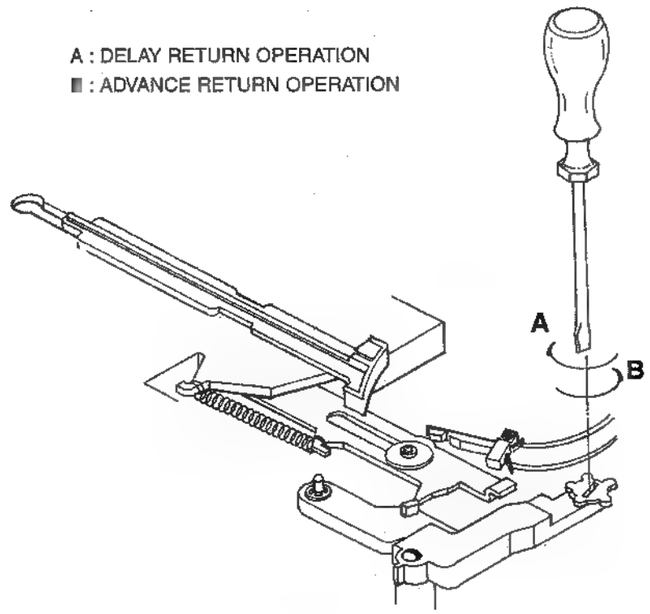


15 - 2

Record Player DL-40 Mechanical Partslist

01	4822 251 70328	Tone Arm	26	4822 276 13817	Shut off plate, SW
1-1	4822 251 30153	Cartridge	27	4822 532 52438	Plastic Washer
02	4822 530 80538	3mm CS Ring	28	4822 502 13959	Screw
05	4822 530 80539	4mm CS Ring	32	4822 522 33225	Small Gear
06	4822 522 33247	Big Gear	34	4822 532 12731	Plastic Washer
07	4822 402 61417	Tone Aarm Elevator	35	4822 532 52434	Washer
08	4822 462 41916	Plastic Cap	37	4822 532 52449	Washer
09	4822 402 61413	Lever, Cueing	40	4822 358 31178	Motor Rubber
10	4822 402 61416	Arm Clip	41	4822 528 50332	Motor Pulley
11	4822 402 61414	Link, Return	42	4822 361 21305	Motor
12	4822 402 61415	Braacket, Adjustment	44	4822 277 11655	Slide Switch
14	4822 492 71081	Spring	48	4822 276 13251	Leaaf Switch
22	4822 492 71082	Clip	51	4822 460 20803	PVC
23	4822 492 71079	Spring	52	4822 528 10843	Turntable Platter
24	4822 492 71077	Spring	53	4822 358 31178	Belt
			56	4822 492 71078	Spring

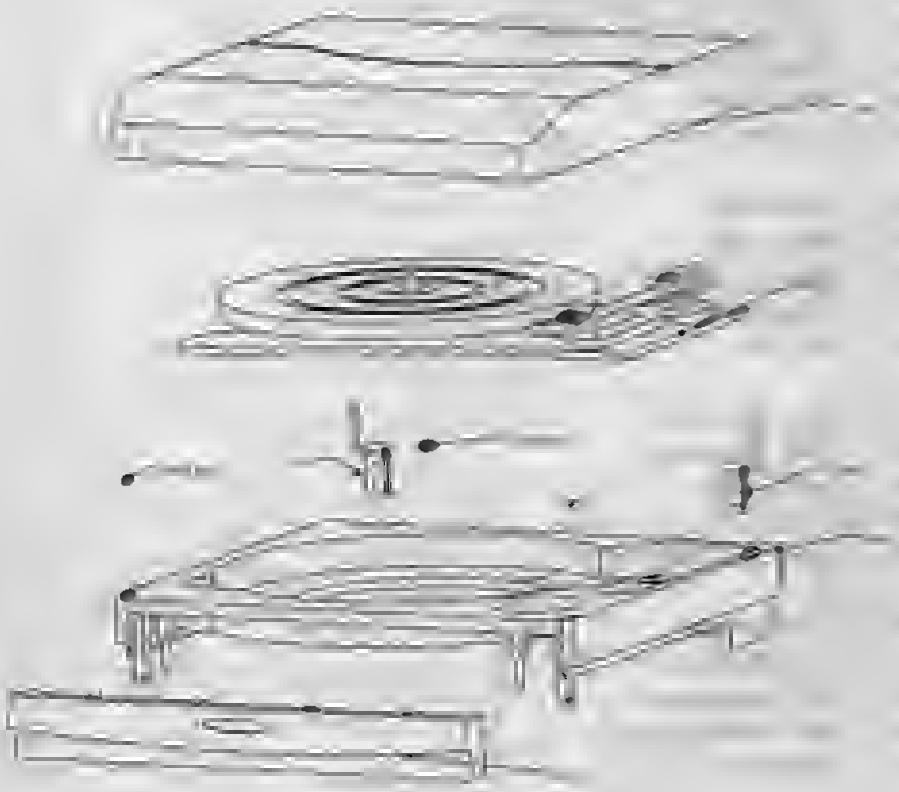
A : DELAY RETURN OPERATION
▮ : ADVANCE RETURN OPERATION



Service

Product Service Group CE Audio

Service Information



1	4822 251 [illegible]		Tone Arm
1	[illegible]		[illegible]
2	[illegible]		[illegible]
4	[illegible]		[illegible]
5	[illegible]		[illegible]
7	[illegible]		[illegible]
8	[illegible]		[illegible]
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24	[illegible]		[illegible]
27	[illegible]		[illegible]
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30	[illegible]		[illegible]
34	[illegible]		[illegible]
35	[illegible]		[illegible]
37	[illegible]		[illegible]
40	[illegible]		[illegible]
41	[illegible]		[illegible]
43	[illegible]		[illegible]
44	[illegible]		[illegible]
46	[illegible]		[illegible]
51	[illegible]		[illegible]
52	[illegible]		[illegible]
53	[illegible]		[illegible]
54	[illegible]		[illegible]
55	[illegible]		[illegible]
56	[illegible]		[illegible]

Note: [illegible]

Service

Product Service Group CE Audio

Service Information

Already published Service Informa

CHANGES DURING PRODUCTION

FRONT BOARD

* From prod tion week 9640 onwards the following is impl- mented to improve th- DSC and CDC Led brightn-

Change	3523 to 220R 1% 0.1W	
	3524 to 220R % 0.1W	
	3530 to 220 1% 0.1W	
	3535 to 220R 1% 0.1W	4822 117 11503
	3569 to 220R 1% 0.1W	4822 117 11503
	357(to 220R 1% 0.1W	4822 117 11503
	357: to 220R 1% 0.1W	4822 117 11503

Delete 3400
7401 4822 209 15-

RHEND BOARD

* From production week 9640 onwards a new applied. The n- - layout and circuit diagrams

Change	6000 t(BZX84-C6V8	5322 130 80406
	6050 to BZX84-C6V8	5322 130 0406

AF2 BOARD

* From production week 9628 a new lay solve EMC problem. he new layout and ircuit diagrams are enclosed.

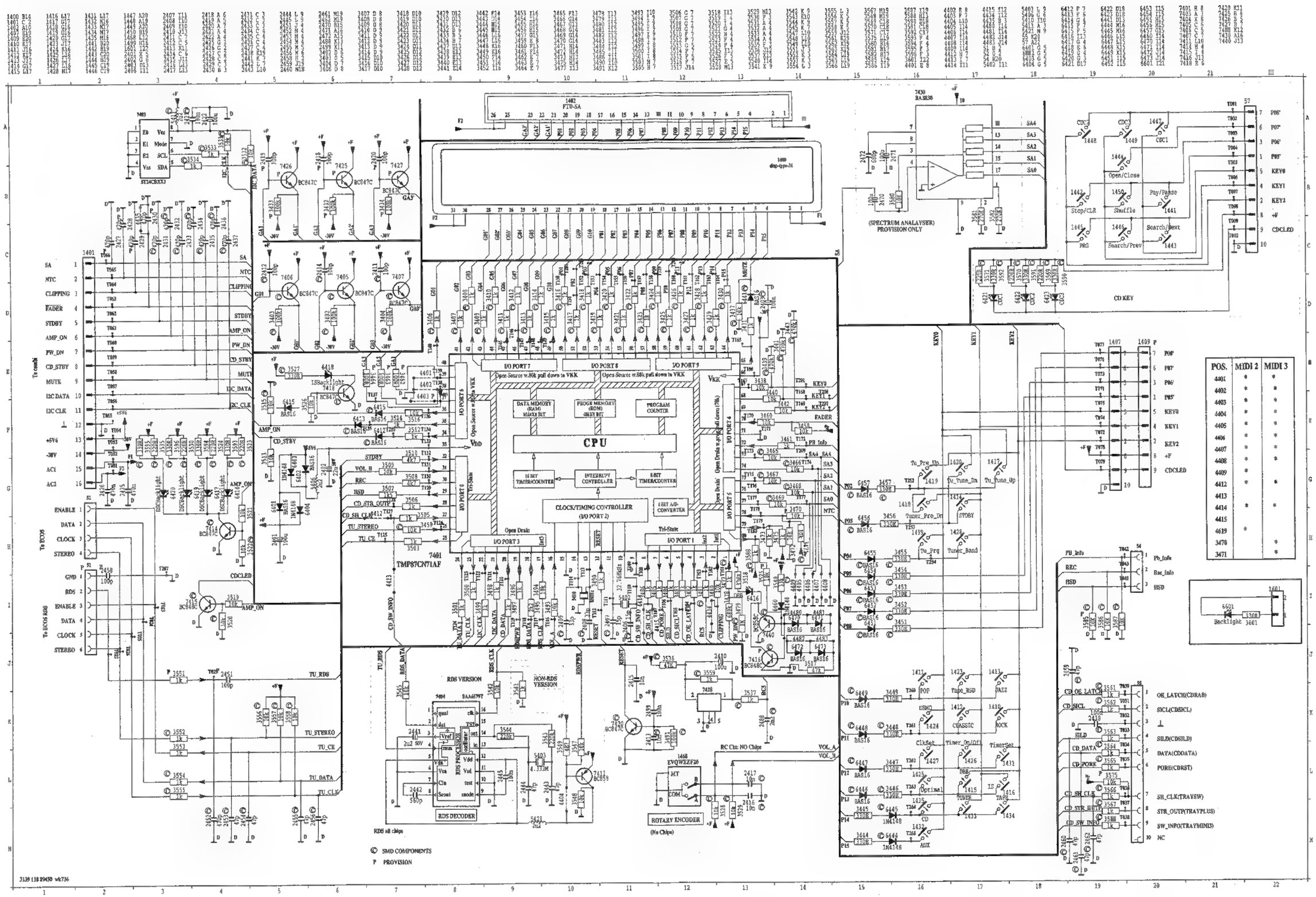
Add	2559 22 F 50V 0%	5322 122 32654
	2579 22n 50V 10%	5322 12 32654

POWER AVA MODULE

(UC MODULE

The electrical schem- enclosed

FRONT CIRCUIT

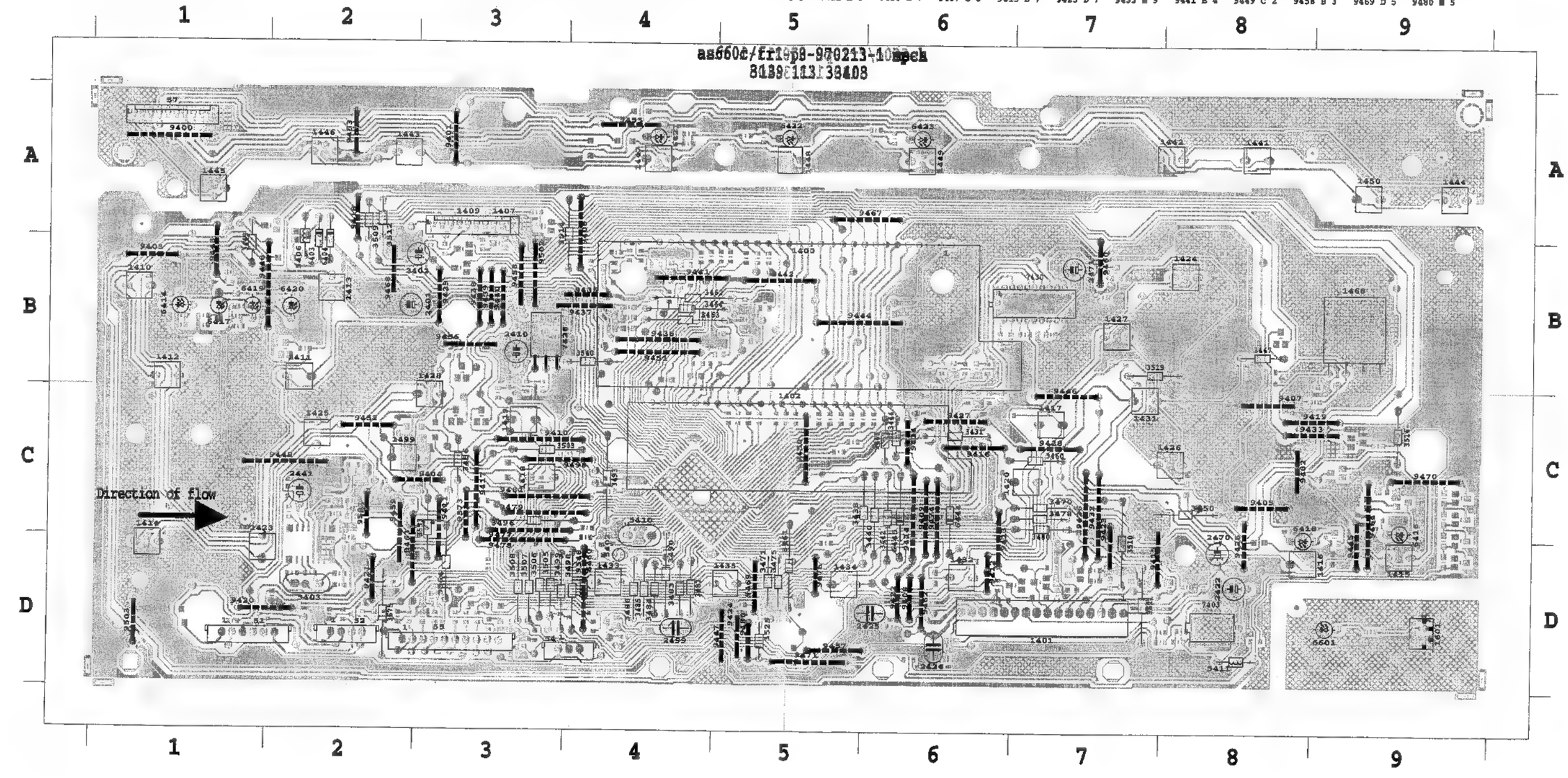


POS.	MIDI 2	MIDI 3
4401	*	*
4402	*	*
4403	*	*
4404	*	*
4405	*	*
4406	*	*
4407	*	*
4408	*	*
4409	*	*
4412	*	*
4413		
4414	*	*
4415		
4619	*	
3470		*
3471		*

© SMD COMPONENTS
P PROVISION

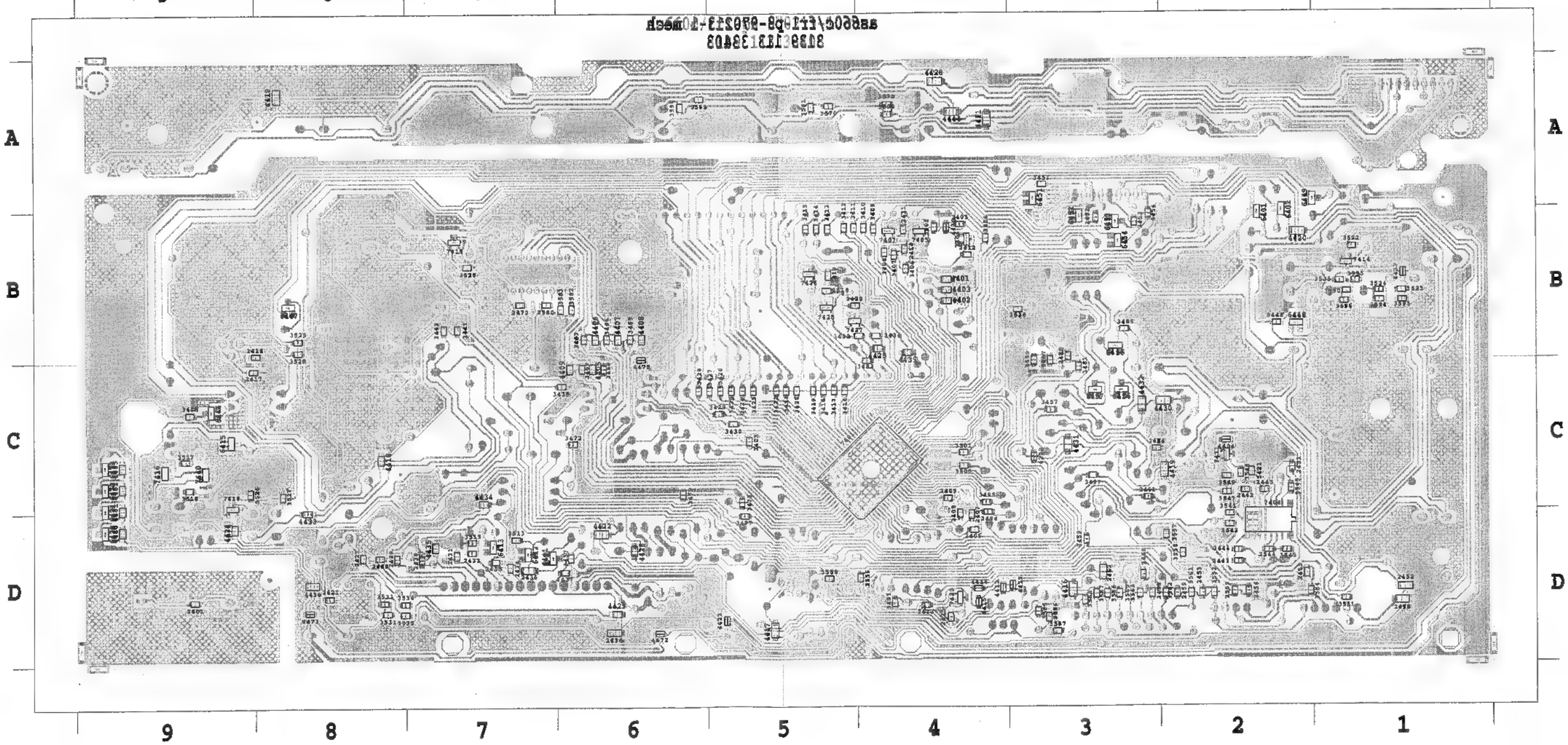
FRONT COMPONENT LAYOUT

1400 B 5	1413 B 2	1423 D 1	1433 D 4	1446 A 2	2401 B 2	2471 B 7	3447 B 8	3464 B 4	3484 D 4	3503 ■ 3	3514 A 4	3575 D 2	6414 B 1	6423 A 6	9400 A 1	9408 D 6	9416 C 6	9424 ■ 5	9434 C 6	9442 B 5	9450 C 5	9459 C 2	9470 C 9	9481 C 3
1401 D 7	1414 D 1	1424 B 8	1434 D 5	1447 A 4	2402 B 2	2499 D 4	3449 B 1	3470 C 7	3485 D 4	3505 D 3	3516 C 9	5402 D 4	6416 C 9	6444 C 6	9401 A 3	9409 C 6	9417 C 3	9425 ■ 8	9435 B 4	9443 B 1	9451 B 4	9460 B 7	9471 D 5	9490 C 3
1402 C 5	1415 D 9	1425 C 2	1435 D 5	1448 A 5	2410 B 3	3431 C 6	3450 C 8	3471 D 5	3486 D 4	3506 D 3	3519 B 7	5403 D 2	6417 B 1	6445 C 6	9402 C 8	9410 C 3	9418 A 2	9426 C 7	9436 B 4	9444 B 5	9452 C 2	9462 D 6	9474 C 6	9501 C 2
1407 A 3	1416 D 8	1426 C 8	1441 A 8	1449 A 6	2422 D 8	3438 C 6	3456 C 3	3475 D 5	3490 D 4	3507 D 3	3521 D 7	5406 B 2	6418 C 8	6460 D 4	9403 B 1	9411 C 3	9419 C 9	9427 C 6	9437 B 4	9445 D 9	9453 A 2	9463 ■ 2	9476 D 5	9502 B 3
1409 A 3	1417 C 7	1427 B 7	1442 A 8	1450 A 9	2425 D 6	3440 C 6	3460 C 7	3478 C 7	3493 C 4	3508 D 3	3525 D 5	5410 C 4	6419 B 1	6601 D 9	9404 C 3	9412 D 6	9420 D 1	9428 C 7	9438 B 3	9446 C 7	9455 A 4	9464 C 9	9477 C 3	9503 D 1
1410 B 1	1418 C 3	1428 C 3	1443 A 2	1468 B 9	2426 D 6	3442 C 6	3461 D 5	3480 C 7	3496 C 3	3509 A 2	3540 B 4	5411 D 8	6420 B 2	7403 D 8	9405 C 8	9413 C 6	9421 D 2	9429 B 3	9439 B 3	9447 D 5	9456 B 3	9467 A 6	9478 D 3	9548 D 6
1411 B 2	1419 C 3	1431 C 7	1444 A 9	1499 C 2	2441 C 2	3444 C 6	3462 B 4	3482 D 4	3498 D 4	3510 D 7	3553 C 3	6403 B 2	6421 A 4	7428 B 3	9406 A 4	9414 C 6	9422 D 6	9432 C 7	9440 B 3	9448 B 1	9457 ■ 5	9468 B 2	9479 C 3	9573 C 3
1412 B 1	1420 C 7	1432 D 6	1445 A 1	1601 D 9	2470 D 8	3445 C 6	3463 B 4	3483 D 4	3499 D 3	3512 A 2	3564 D 3	6404 B 2	6422 A 5	7430 B 7	9407 C 8	9415 D 7	9423 D 7	9433 ■ 9	9441 B 4	9449 C 2	9458 B 3	9469 D 5	9480 ■ 5	

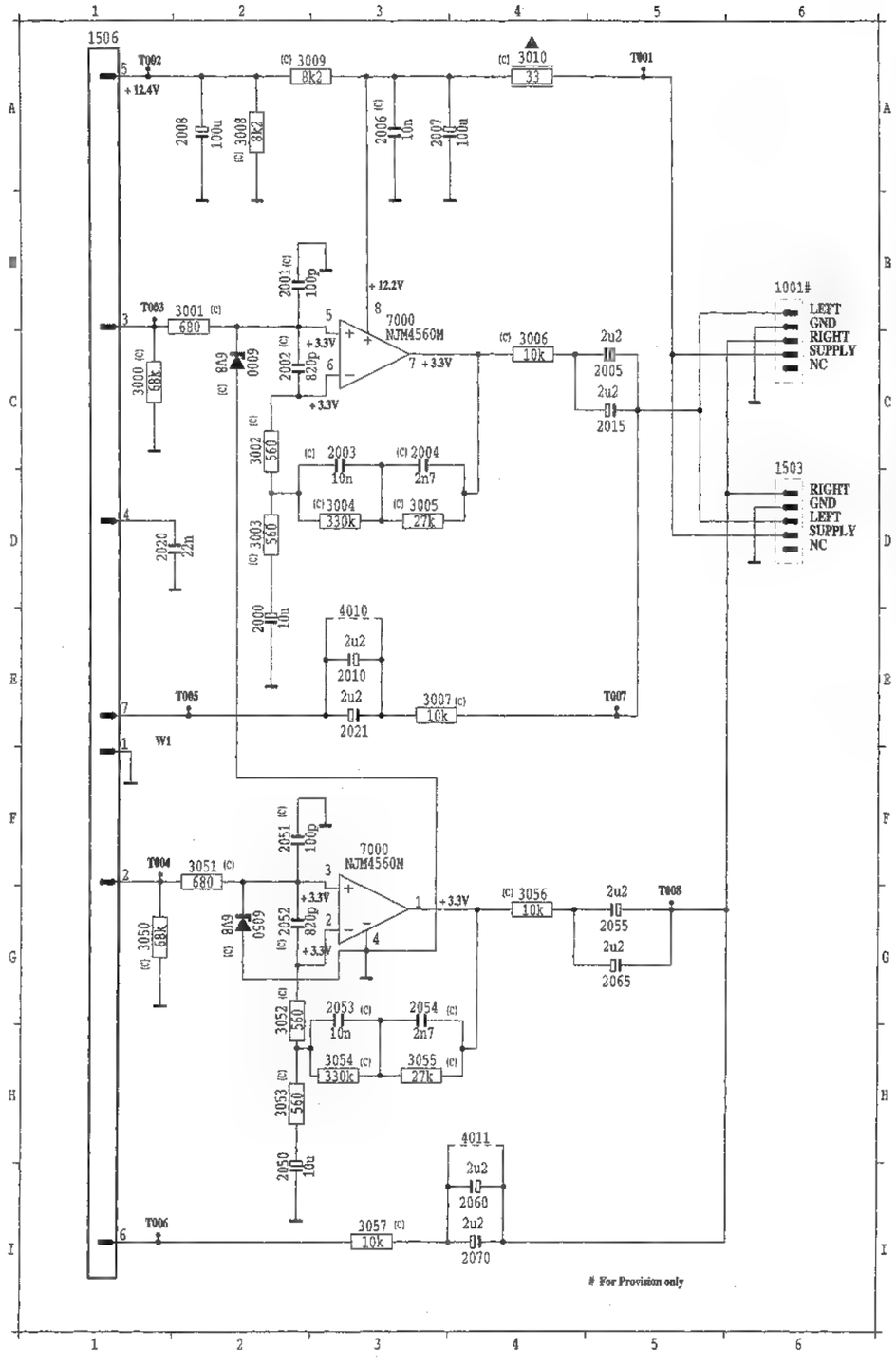


FRONT CHIP LAYOUT

2408 D 4	2419 B 5	2434 D 7	2452 D 1	2472 B 7	3411 B 5	3421 C 5	3432 B 4	3452 B 3	3469 C 6	3500 C 4	3526 C 9	3536 B 3	3551 D 1	3563 D 3	3582 B 6	3595 B 1	4407 B 6	4417 D 5	4429 D 6	4439 B 4	6401 B 2	6451 A 3	6673 C 9	7418 C 9
2409 C 4	2420 B 5	2435 D 7	2453 D 2	2488 B 3	3412 B 5	3422 C 5	3433 C 4	3453 B 3	3472 C 6	3501 C 4	3527 C 8	3537 C 3	3552 D 2	3565 D 3	3585 D 3	3596 B 1	4408 B 6	4418 C 8	4430 C 2	6444 A 4	6402 B 2	6452 B 3	7401 C 4	7420 D 4
2411 B 4	2421 D 8	2436 D 6	2454 C 3	3402 B 4	3413 B 5	3423 C 5	3434 B 4	3454 B 3	3473 C 5	3513 D 7	3528 B 8	3541 D 2	3554 D 2	3566 D 3	3586 D 3	3601 D 9	4409 C 6	4419 C 2	4431 C 3	6412 D 7	6453 B 3	7404 D 2	7425 B 5	
2412 B 4	2427 D 8	2437 D 6	2455 D 2	3403 B 4	3414 B 5	3424 C 5	3437 D 6	3455 B 3	3477 D 5	3515 D 7	3529 B 8	3542 D 2	3555 D 2	3567 D 3	3587 D 3	4200 C 3	4410 A 8	4420 B 2	4432 C 3	6413 D 7	6454 B 3	7405 B 4	7426 B 5	
2413 D 4	2428 D 8	2438 D 3	2456 D 2	3404 B 4	3415 B 5	3425 C 5	3439 C 6	3457 C 3	3479 C 6	3517 C 9	3530 B 1	3543 D 2	3556 D 4	3568 D 3	3588 D 5	4401 B 4	4411 A 4	4422 D 6	4433 D 8	4475 B 6	6415 C 9	6455 B 3	7406 B 4	7427 B 5
2414 B 4	2429 D 8	2442 C 2	2458 D 1	3406 B 4	3416 C 5	3426 C 5	3441 B 7	3459 D 3	3481 C 3	3518 C 9	3531 D 8	3544 D 2	3557 D 2	3569 A 6	3590 A 6	4402 B 4	4412 D 4	4423 D 5	4434 C 7	4480 D 9	6441 D 7	6456 C 3	7407 B 4	7440 C 9
2415 D 4	2430 D 7	2443 D 2	2459 D 2	3407 B 4	3417 C 5	3427 C 5	3443 B 7	3465 B 6	3491 D 4	3520 B 7	3532 D 8	3545 C 2	3558 D 2	3570 A 5	3591 A 5	4403 B 4	4413 D 3	4424 D 9	4435 D 7	4481 C 9	6446 C 9	6457 C 3	7411 C 2	



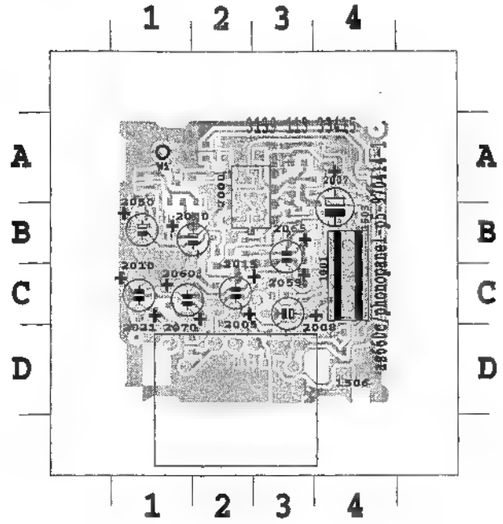
PHONO CIRCUIT *(For External Record Player)*



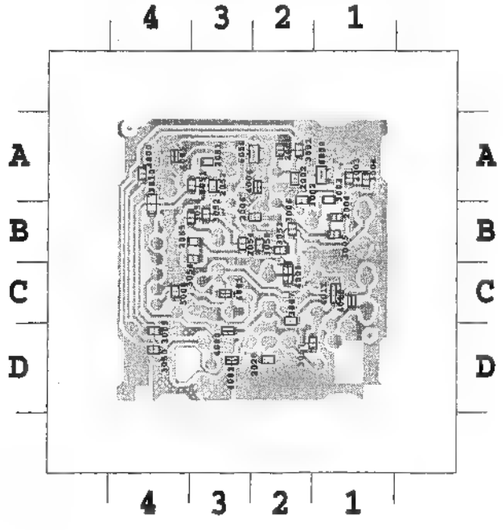
1001 B 6
1503 D 6
1506 A 1
2000 B 2
2001 B 2
2002 C 2
2003 C 3
2004 C 3
2005 C 5
2006 A 3
2007 A 3
2008 A 2
2010 B 3
2015 C 3
2020 D 2
2021 E 3
2050 I 2
2051 F 2
2052 G 2
2053 G 3
2054 G 3
2055 G 5
2060 I 4
2065 G 5
2070 I 4
3000 C 1
3001 B 2
3002 C 2
3003 D 2
3004 D 3
3005 D 3
3006 C 4
3007 E 3
3008 A 2
3009 A 3
3010 A 4
3050 G 1
3051 F 2
3052 G 2
3053 H 2
3054 H 3
3055 H 3
3056 G 4
3057 I 3
4010 E 3
4011 H 4
6000 C 2
6050 G 2
7000 B 3
7000 F 3

PHONO COMPONENT AND CHIP LAYOUT *(For External Record Player)*

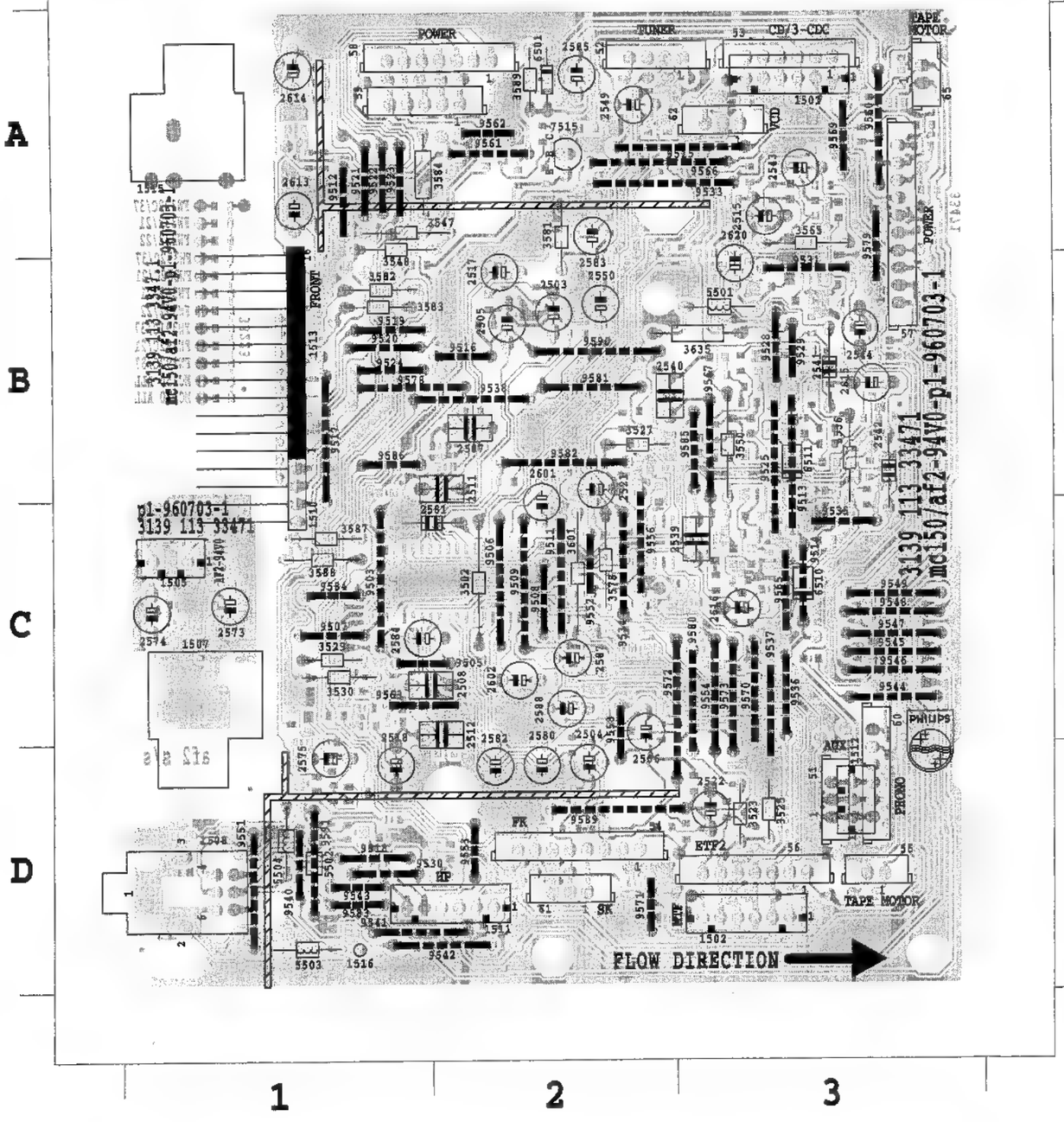
1001 C 4 2005 C 2 2015 C 2 2060 C 1 W1 A 1
1503 B 4 2007 B 4 2021 C 1 2065 B 3
1506 D 2 2008 C 3 2050 B 1 2070 C 1
2000 B 2 2010 C 1 2055 B 3 7000 A 2



2001 A 2 2053 B 3 3006 B 2 3053 B 2 4003 C 2
2002 A 1 2056 B 3 3007 C 2 3054 B 3 4004 A 2
2003 A 1 3000 A 4 3008 C 4 3055 B 2 4005 A 4
2004 B 1 3001 A 2 3009 D 4 3056 B 3 6000 A 1
2006 B 2 3002 A 2 3010 B 4 3057 D 1 6050 A 2
2020 D 2 3003 A 1 3050 D 4 4000 D 3
2051 A 3 3004 A 1 3051 A 3 4001 C 3
2052 A 3 3005 B 1 3052 B 3 4002 D 3

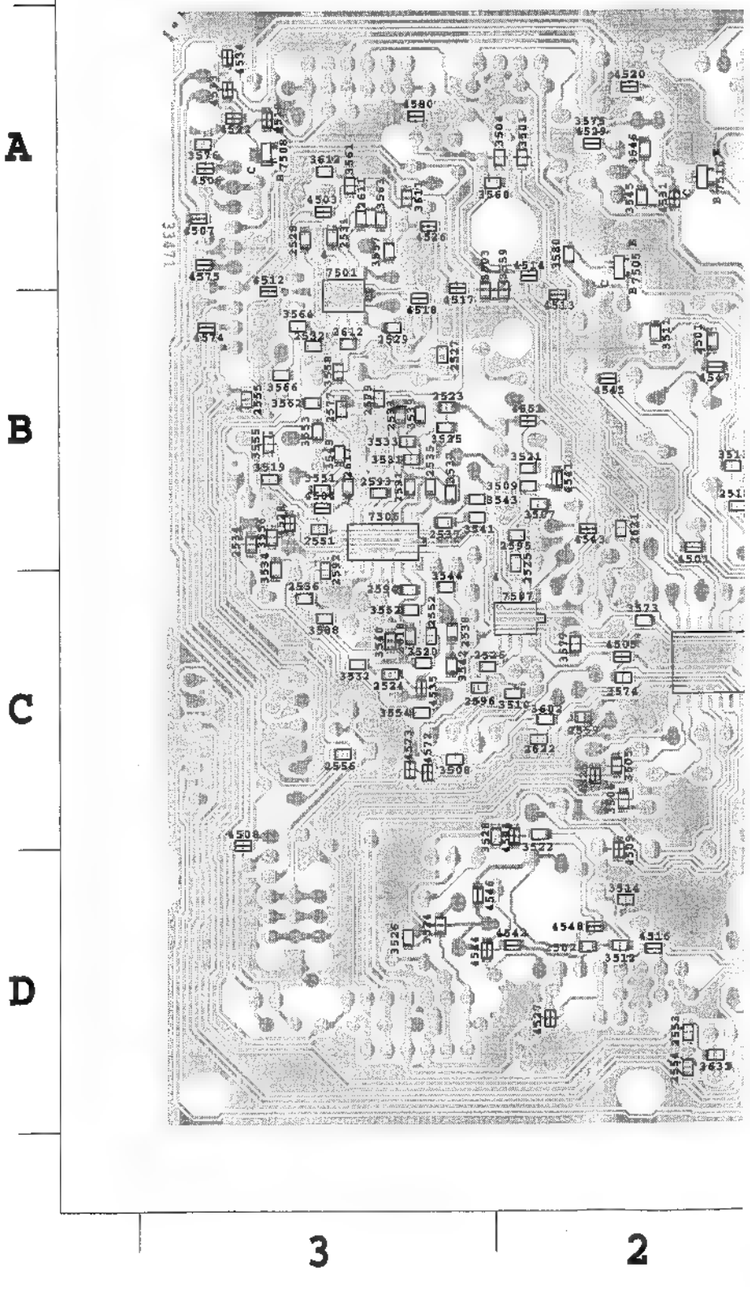


AF2 COMPONENT LAYOUT

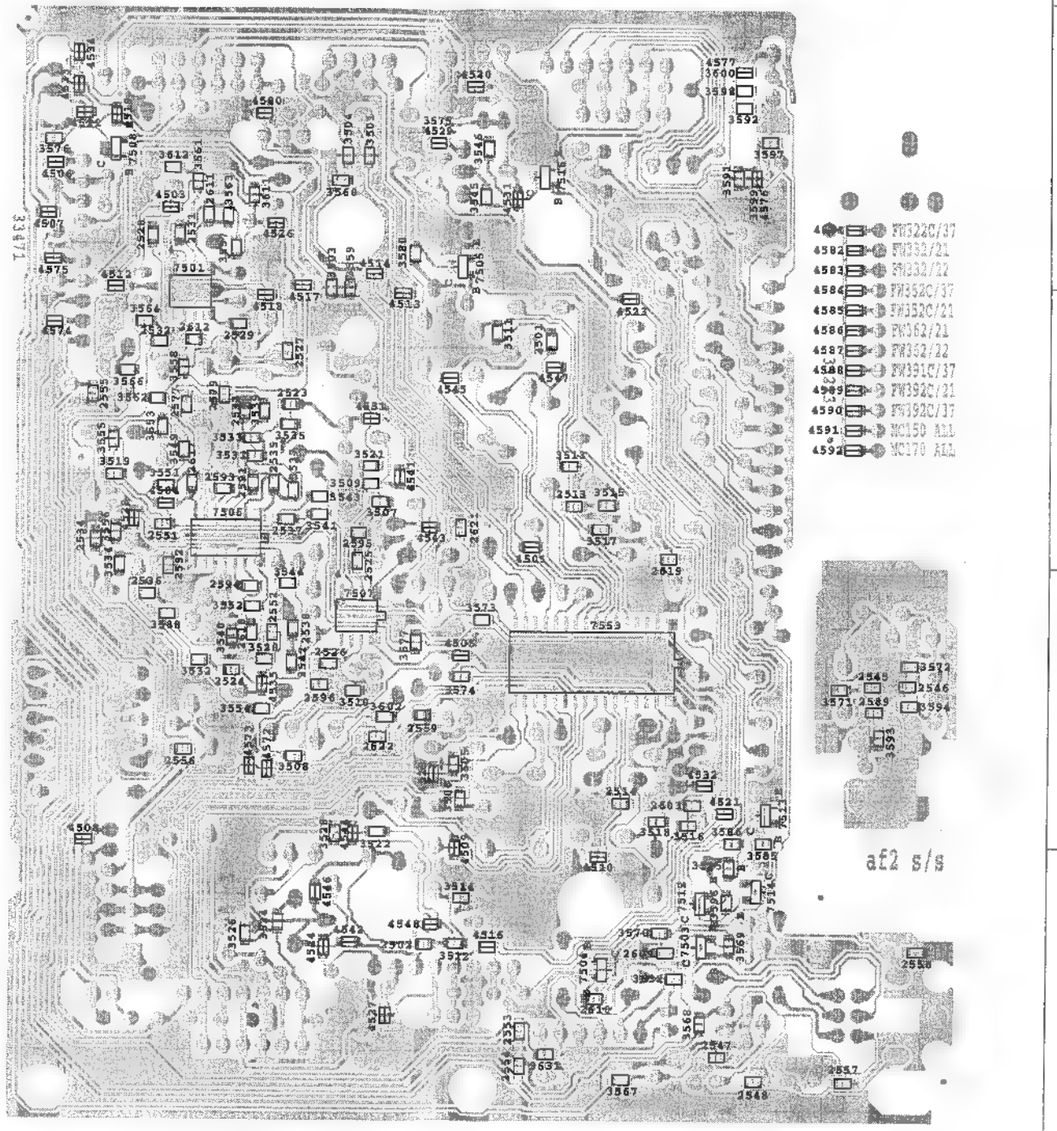


51	D 3	2613	A 1	9531	B 3
52	A 2	2614	A 1	9533	A 2
53	A 3	2615	B 3	9534	C 2
54	D 2	2616	C 3	9535	C 3
55	D 3	2620	B 3	9536	C 3
56	D 3	3502	C 2	9537	C 3
57	A 3	3523	D 3	9538	B 2
■■	A 2	3525	D 3	9540	D 1
59	A 1	3527	B 2	9541	D 1
60	D 3	3529	C 1	9542	D 2
61	D 2	3530	C 1	9543	D 1
62	A 3	3536	B 3	9544	C 3
65	A 3	3547	A 1	9545	C 3
1501	A 3	3548	A 1	9546	C 3
1502	D 3	3550	■ 3	9547	C 3
1505	C 1	3565	A 3	9548	C 3
1507	C 1	3578	C 2	9549	C 3
1508	D 1	3581	A 2	9551	D 1
1510	B 1	3582	B 1	9552	C 2
1511	D 2	3583	B 1	9553	D 2
1512	D 3	3584	A 1	9554	C 3
1513	B 1	3587	C 1	9556	C 2
1515	A 1	3588	C 1	9558	C 2
1516	D 1	3589	A 2	9560	A 3
2503	B 2	3601	C 2	9561	A 2
2504	D 2	3635	B 3	9562	A 2
2505	B 2	5501	B 3	9563	C 1
2506	C 2	5502	D 1	9565	C 3
2507	B 2	5503	D 1	9566	A 2
2508	C 1	5504	D 1	9567	B 3
2511	B 2	6501	A 2	9569	A 3
2512	C 2	6510	C 3	9570	C 3
2515	A 3	6511	B 3	9571	D 2
2517	B 2	7515	A 2	9572	C 2
2518	D 1	9503	C 1	9573	C 3
2521	B 2	9505	C 1	9578	B 1
2522	D 3	9506	C 2	9579	A 3
2539	C 3	9507	C 1	9580	C 3
2540	B 2	9508	C 2	9581	B 2
2541	B 3	9509	C 2	9582	B 2
2542	B 3	9511	C 2	9583	D 1
2543	A 3	9512	A 1	9584	C 1
2544	B 3	9513	B 3	9585	B 3
2549	A 2	9514	C 3	9586	B 1
2550	B 2	9515	A 3	9589	D 2
2573	C 1	9516	B 2	9590	B 2
2574	C 1	9517	B 1	9591	D 1
2575	D 1	9518	D 1		
2580	D 2	9519	B 1		
2581	C 1	9520	■ 1		
2582	D 2	9521	A 1		
2583	A 2	9522	A 1		
2584	C 1	9523	A 1		
2585	A 2	9524	B 1		
2587	C 2	9525	B 3		
2588	C 2	9528	B 3		
2601	C 2	9529	B 3		
2602	C 2	9530	D 1		

AF2 CHIP LAYOUT



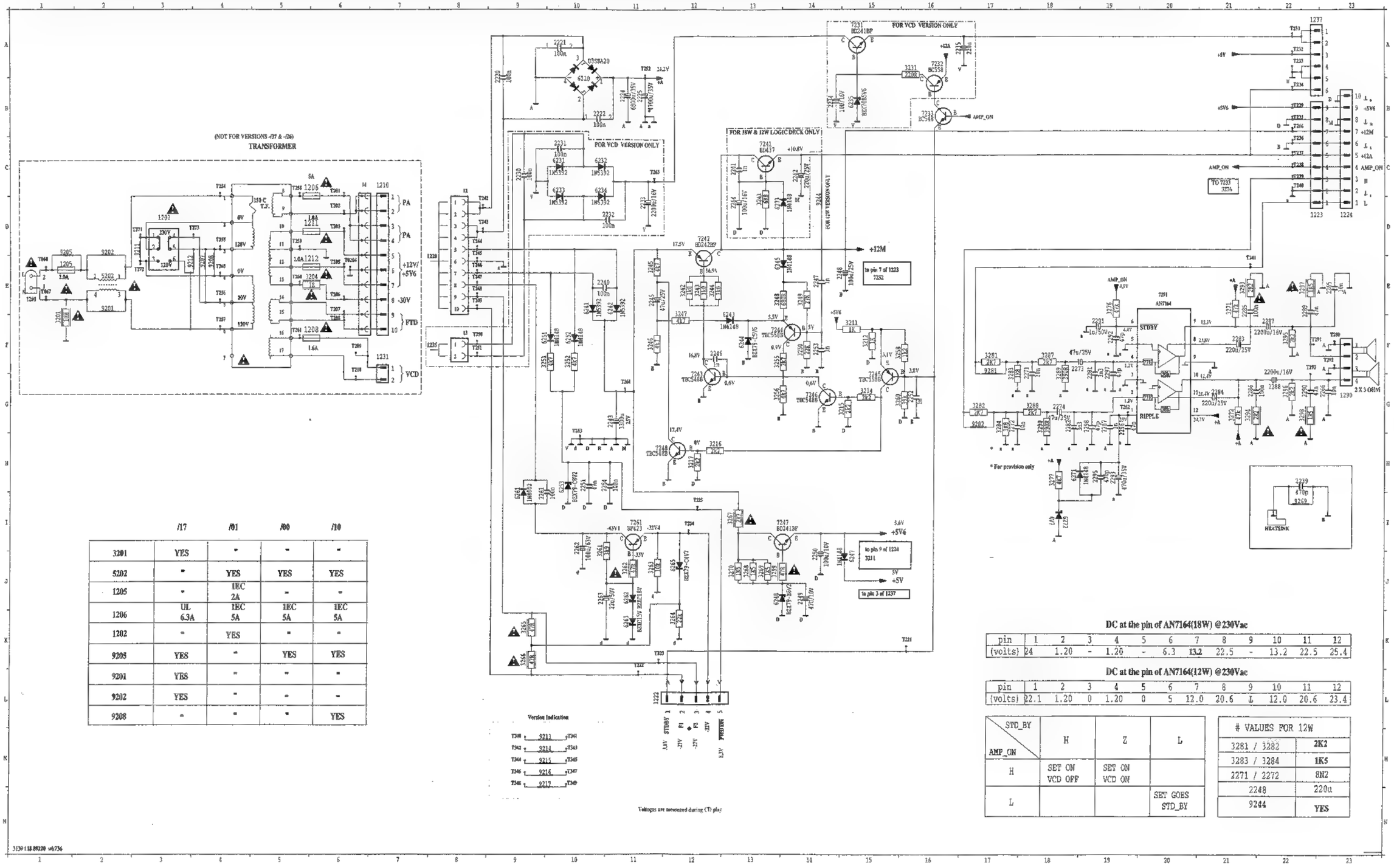
AF2 CHIP LAYOUT



51 D 3	2613 A 1	9531 B 3	
52 A 2	2614 A 1	9533 A 2	
53 A 3	2615 B 3	9534 C 2	
54 D 2	2616 C 3	9535 C 3	
55 D 3	2620 B 3	9536 C 3	
56 D 3	3502 C 2	9537 C 3	
57 A 3	3523 D 3	9538 B 2	
58 A 2	3525 D 3	9540 D 1	
59 A 1	3527 B 2	9541 D 1	
60 D 3	3529 C 1	9542 D 2	
61 D 2	3530 C 1	9543 D 1	
62 A 3	3536 B 3	9544 C 3	
65 A 3	3547 A 1	9545 C 3	
1501 A 3	3548 A 1	9546 C 3	
1502 D 3	3550 B 3	9547 C 3	
1505 C 1	3565 A 3	9548 C 3	
1507 C 1	3578 C 2	9549 C 3	
1508 D 1	3581 A 2	9551 D 1	
1510 B 1	3582 B 1	9552 C 2	
1511 D 2	3583 B 1	9553 D 2	
1512 D 3	3584 A 1	9554 C 3	
1513 B 1	3587 C 1	9556 C 2	
1515 A 1	3588 C 1	9558 C 2	
1516 D 1	3589 A 2	9560 A 3	
2503 B 2	3601 C 2	9561 A 2	
2504 D 2	3635 B 3	9562 A 2	
2505 B 2	5501 B 3	9563 C 1	
2506 C 2	5502 D 1	9565 C 3	
2507 B 2	5503 D 1	9566 A 2	
2508 C 1	5504 D 1	9567 B 3	
2511 B 2	6501 A 2	9569 A 3	
2512 C 2	6510 C 3	9570 C 3	
2515 A 3	6511 B 3	9571 D 2	
2517 B 2	7515 A 2	9572 C 2	
2518 D 1	9503 C 1	9573 C 3	
2521 B 2	9505 C 1	9578 B 1	
2522 D 3	9506 C 2	9579 A 3	
2539 C 3	9507 C 1	9580 C 3	
2540 B 2	9508 C 2	9581 B 2	
2541 B 3	9509 C 2	9582 B 2	
2542 B 3	9511 C 2	9583 D 1	
2543 A 3	9512 A 1	9584 C 1	
2544 B 3	9513 B 3	9585 B 3	
2549 A 2	9514 C 3	9586 B 1	
2550 B 2	9515 A 3	9589 D 2	
2573 C 1	9516 B 2	9590 B 2	
2574 C 1	9517 B 1	9591 D 1	
2575 D 1	9518 D 1		
2580 D 2	9519 B 1		
2581 C 1	9520 B 1		
2582 D 2	9521 A 1		
2583 A 2	9522 A 1		
2584 C 1	9523 A 1		
2585 A 2	9524 B 1		
2587 C 2	9525 B 3		
2588 C 2	9528 B 3		
2601 C 2	9529 B 3		
2602 C 2	9530 D 1		

2501 B 2	3509 B 2	3577 C 2	4551 B 2
2502 D 2	3510 C 2	3580 A 2	4572 C 3
2513 B 2	3511 B 2	3585 C 1	4573 C 3
2514 C 1	3512 D 2	3586 C 1	4574 B 3
2523 B 3	3513 B 2	3591 A 1	4575 A 3
2524 C 3	3514 D 2	3592 A 1	4576 A 1
2525 B 2	3515 B 2	3593 C 1	4577 A 1
2526 C 3	3516 C 1	3594 C 1	4580 A 3
2527 B 3	3517 B 2	3595 D 1	4581 A 1
2528 A 3	3518 C 1	3596 D 1	4582 A 1
2529 B 3	3519 B 3	3597 A 1	4583 A 1
2531 A 3	3520 C 3	3598 A 1	4584 B 1
2532 B 3	3521 B 2	3599 A 1	4585 B 1
2533 B 3	3522 C 2	3600 A 1	4586 B 1
2534 B 3	3524 D 3	3602 C 2	4587 B 1
2535 B 3	3526 D 3	3611 A 3	4588 B 1
2536 C 3	3528 C 3	3612 A 3	4589 B 1
2537 B 3	3531 B 3	3631 D 2	4590 B 1
2538 C 3	3532 C 3	3632 D 1	4591 B 1
2545 C 1	3533 B 3	4501 B 2	4592 B 1
2546 C 1	3534 C 3	4503 A 3	7501 B 3
2547 D 1	3535 B 3	4504 B 3	7503 D 1
2548 D 1	3537 B 3	4505 C 2	7504 D 2
2551 B 3	3538 C 3	4506 A 3	7505 A 2
2552 C 3	3539 B 3	4507 A 3	7506 B 3
2553 D 2	3540 C 3	4508 C 3	7507 C 2
2554 D 2	3541 B 3	4509 D 2	7508 A 3
2555 B 3	3542 C 3	4510 D 2	7512 D 1
2556 C 3	3543 B 3	4512 B 3	7513 C 1
2557 D 1	3544 C 3	4513 B 2	7514 D 1
2558 D 1	3545 A 2	4514 A 2	7516 A 2
2559 C 2	3546 A 2	4516 D 2	7553 C 2
2577 B 3	3549 B 3	4517 B 3	
2579 B 3	3551 B 3	4518 B 3	
2589 C 1	3552 C 3	4519 A 3	
2591 B 3	3553 B 3	4520 A 2	
2592 C 3	3554 C 3	4521 C 1	
2593 B 3	3555 B 3	4522 A 3	
2594 C 3	3556 B 3	4523 B 1	
2595 B 2	3557 A 3	4524 D 3	
2596 C 3	3558 B 3	4525 C 2	
2603 C 1	3559 B 2	4526 A 3	
2609 D 1	3560 A 3	4527 D 2	
2610 D 2	3561 A 3	4528 B 3	
2611 A 3	3562 B 3	4529 A 2	
2612 B 3	3563 A 3	4531 A 2	
2617 B 3	3564 B 3	4532 C 1	
2618 C 3	3566 B 3	4533 A 3	
2619 B 1	3567 D 1	4534 A 3	
2621 B 2	3568 D 1	4535 C 3	
2622 C 2	3569 D 1	4541 B 2	
3501 A 2	3570 D 1	4542 D 2	
3503 B 3	3571 C 1	4543 B 2	
3504 A 2	3572 C 1	4544 C 2	
3505 C 2	3573 C 2	4545 B 2	
3506 C 2	3574 C 2	4546 D 3	
3507 B 2	3575 A 2	4547 B 2	
3508 C 3	3576 A 3	4548 D 2	

POWER 2VA CIRCUIT



	/17	/01	/00	/10
3201	YES	"	"	"
5202	"	YES	YES	YES
1205	"	IEC 2A	"	"
1206	UL 6.3A	IEC 5A	IEC 5A	IEC 5A
1202	"	YES	"	"
9205	YES	"	YES	YES
9201	YES	"	"	"
9202	YES	"	"	"
9208	"	"	"	YES

DC at the pin of AN7164(18W) @230Vac

pin	1	2	3	4	5	6	7	8	9	10	11	12
(volts)	24	1.20	-	1.20	-	6.3	13.2	22.5	-	13.2	22.5	25.4

DC at the pin of AN7164(12W) @230Vac

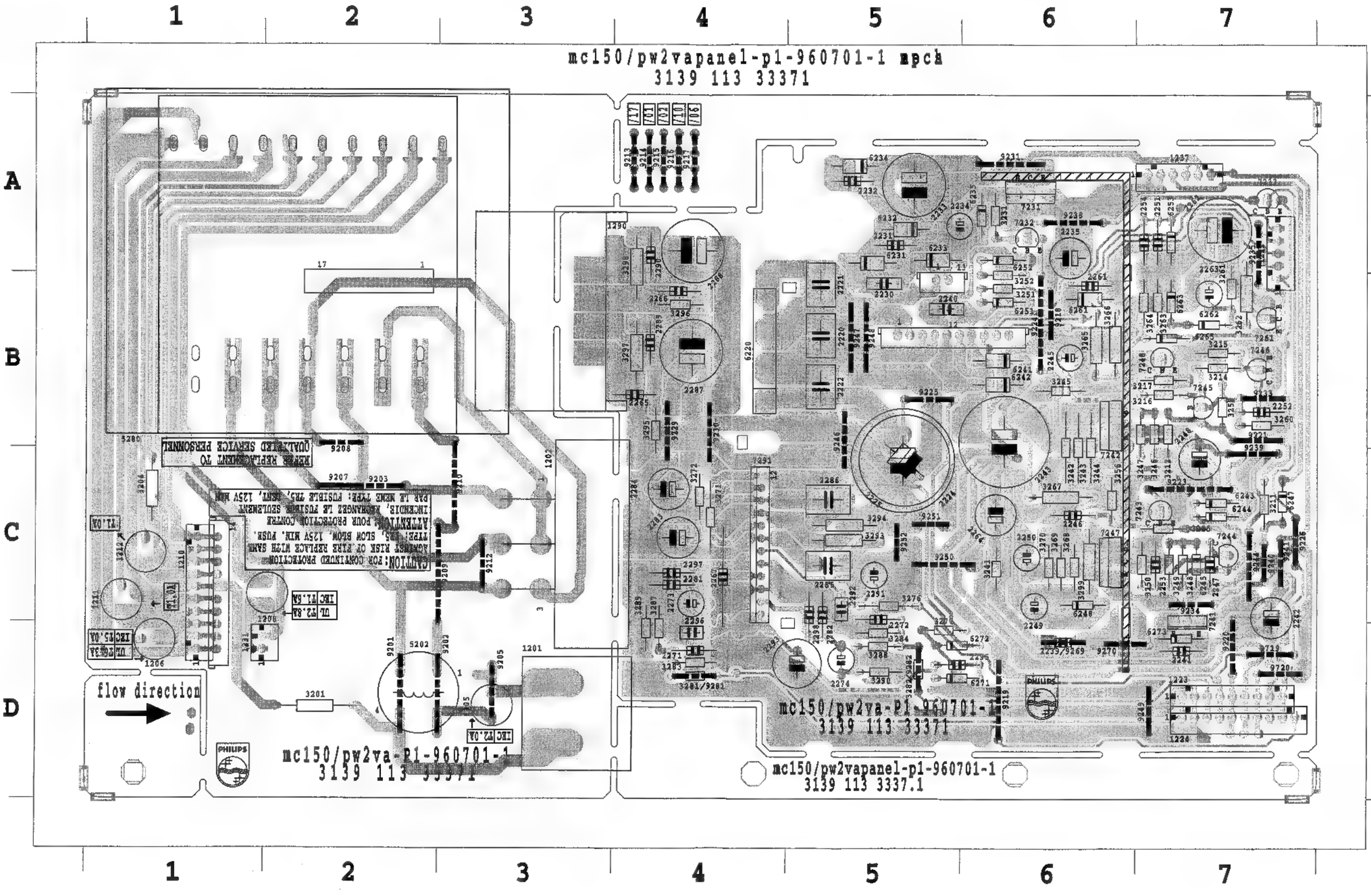
pin	1	2	3	4	5	6	7	8	9	10	11	12
(volts)	22.1	1.20	0	1.20	0	5	12.0	20.6	L	12.0	20.6	23.4

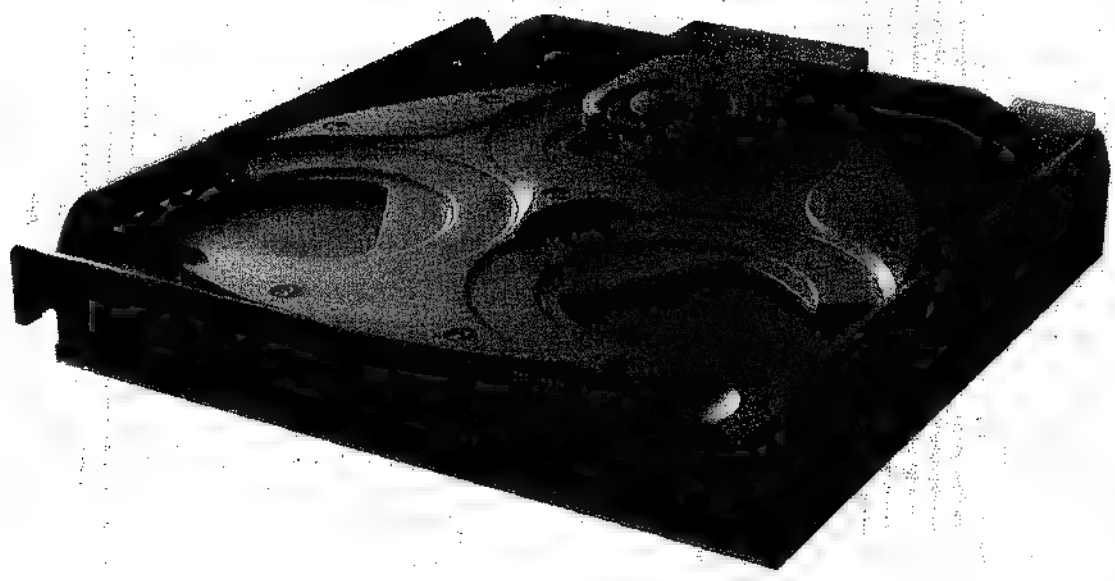
STD_BY / AMP_ON	H	Z	L
H	SET ON VCD OFF	SET ON VCD ON	
L			SET GOES STD_BY

# VALUES FOR 12W	
3281 / 3282	2K2
3283 / 3284	1K5
2271 / 2272	8N2
2248	220u
9244	YES

POWER 2VA COMPONENT LAYOUT

1205 D 3	2220 B 5	2240 B 5	2253 C 7	2274 D 5	2292 C 5	3216 B 7	3250 C 7	3266 B 6	3284 D 5	5202 D 2	6245 C 7	6273 D 7	7261 B 7	9214 A 4	9229 B 4	9247 B 5	----
1206 D 1	2221 B 5	2241 D 7	2254 A 7	2281 C 4	2293 D 5	3217 B 7	3251 B 6	3267 C 6	3287 D 4	5280 B 2	6247 C 7	7231 A 6	7291 C 4	9215 A 4	9230 B 4	9248 B 5	
1208 C 2	2222 B 5	2242 C 7	2261 B 6	2282 C 5	2295 D 5	3231 A 6	3252 B 6	3268 C 6	3288 D 5	6220 B 4	6248 C 6	7232 A 6	9201 D 2	9216 A 4	9231 A 6	9249 D 7	
1210 C 1	2224 C 5	2243 B 6	2262 A 7	2283 C 4	2296 D 4	3241 C 6	3255 C 7	3269 C 6	3289 D 4	6231 A 5	6251 B 6	7233 A 7	9202 D 2	9217 A 4	9233 B 7	9250 C 5	
1211 C 1	2225 C 5	2245 B 6	2263 B 7	2284 C 4	2297 C 4	3242 B 6	3256 C 6	3270 C 6	3290 D 5	6232 A 5	6252 A 6	7241 C 7	9203 C 2	9218 B 6	9234 C 7	9251 C 5	
1212 C 1	2230 B 5	2246 C 6	2264 C 6	2285 C 5	2298 C 5	3243 B 6	3258 B 7	3271 C 4	3293 C 5	6233 A 5	6253 A 7	7242 B 6	9205 D 3	9219 D 6	9235 A 7	9252 C 5	
1222 A 7	2231 A 5	2247 C 7	2265 B 4	2286 C 5	3201 D 2	3244 B 6	3260 B 7	3272 C 4	3294 C 5	6234 A 5	6261 B 6	7243 C 7	9207 C 2	9220 D 7	9238 A 6	9269 D 6	



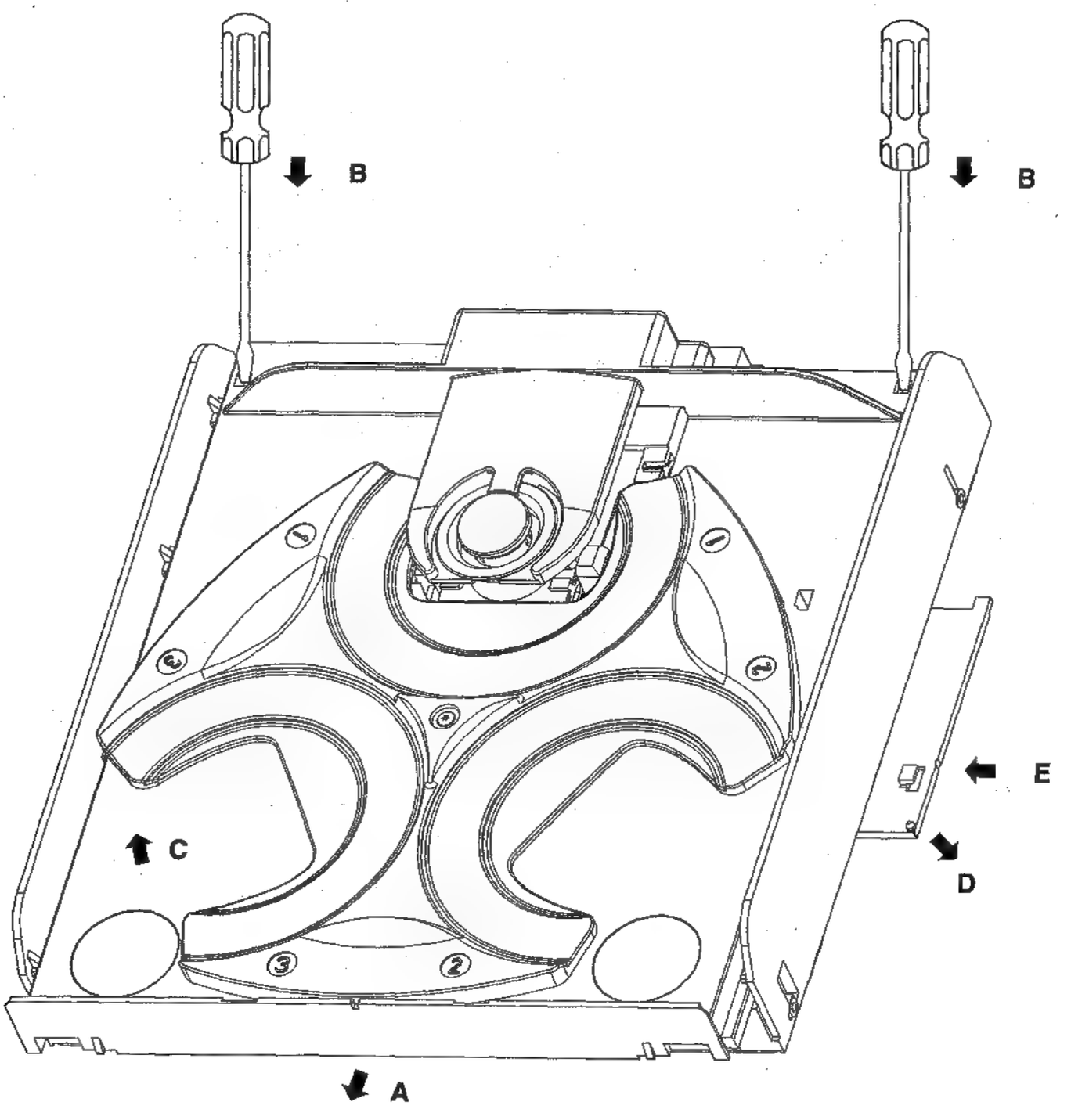


3CDC Module

(3 Disc Carrousel Changer)

TABLE OF CONTENTS

Demounting Hints



Demounting of Drawer

→ **A** Pull drawer outwards
→ **B** Unlock drawer with screwdriver
→ **C** Lift drawer to demount from chassis

Demounting of Flex Plate

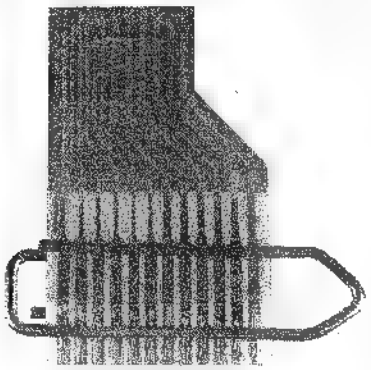
→ **D** Lift plate to unlock pin from bottom plate
→ **E** Move plate inwards to demount from bottom plate

Servicing Hints

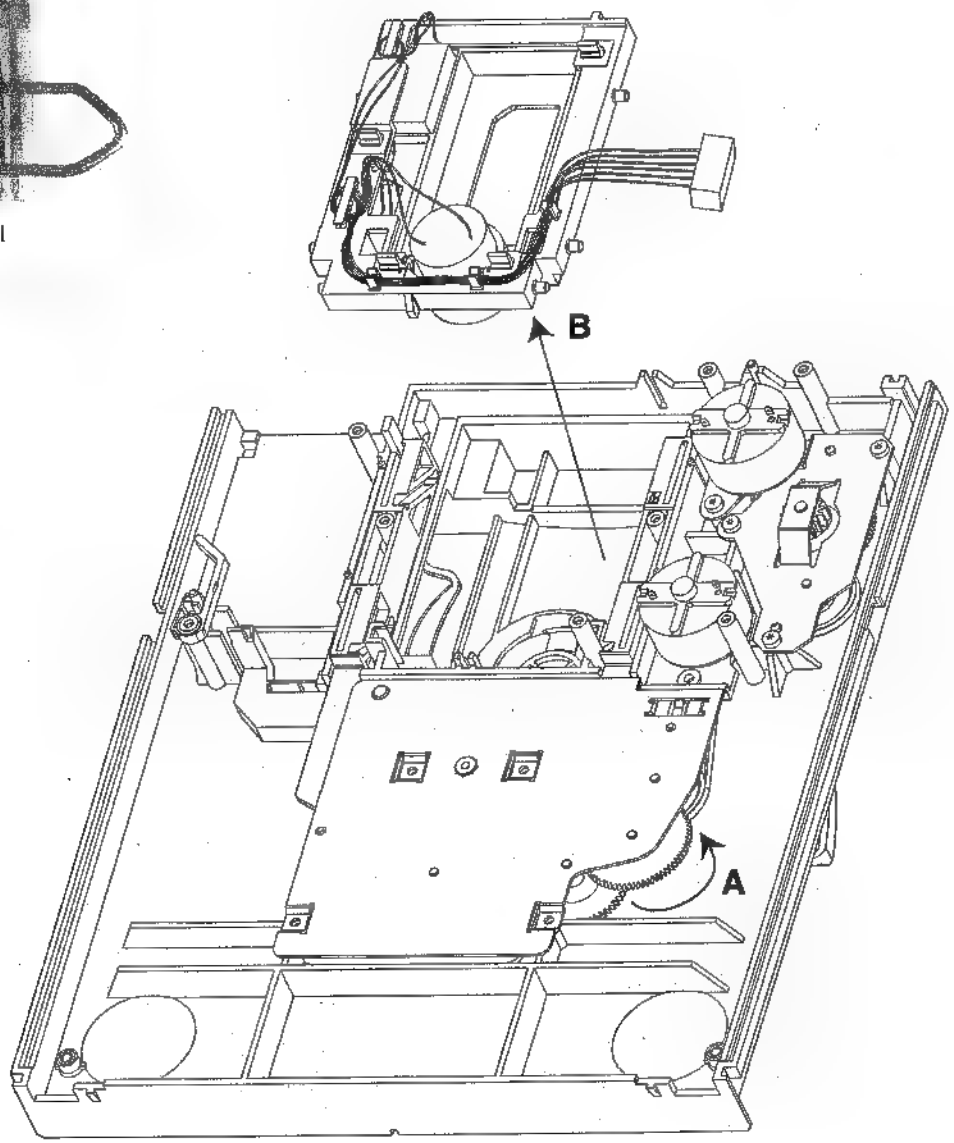
Replacement of CD Drive

See also exploded view of changer mechanism.

1. Demount flex plate (pos 140).
2. Demount printed circuit board: remove 6 screws and desolder lips of tray motor and carrousel motor.
3. Disconnect flexfoil and JST connector of CD drive from Printed circuit board. Shortcircuit the flexfoil with a paperclip to protect the laser against ESD.
4. Remove 2 screws (pos 107,108) and demount CD drive lockings (pos 105,106).
5. Turn gearwheel (pos 42) of disc change mechanism by finger to move CD drive support in upper position as shown in picture below Ⓐ.
6. Demount CD drive support (pos 95) Ⓑ.
7. Replace CD drive (pos 100). The wire tree of JST connector has to be desoldered and resoldered on the new CD drive again.



CD drive flex foil

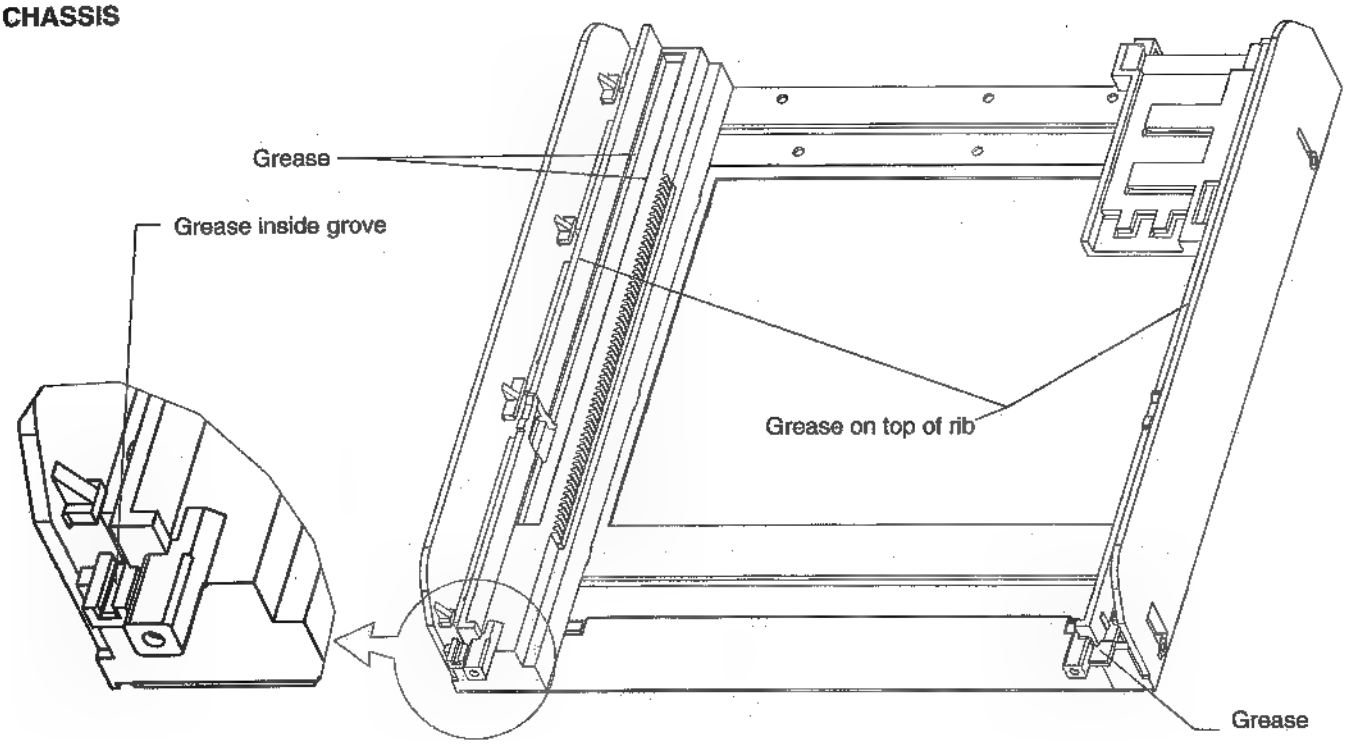


Mounting of Carrousel

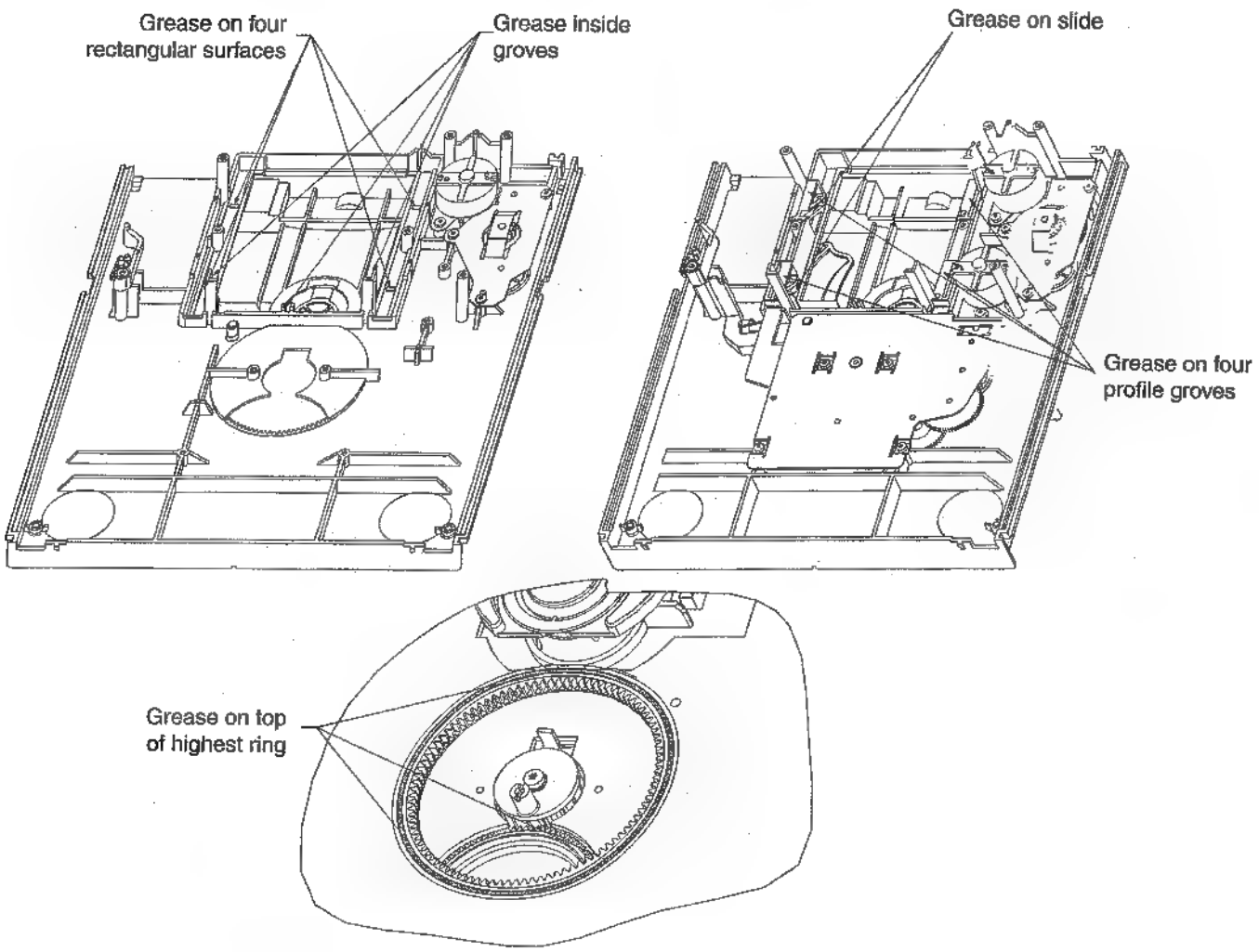
1. Turn gearwheel (pos 42) of disc change mechanism by finger until CD drive is in play position.
2. Mount carrousel (pos 115) so that disc is positioned right on turntable. Carrousel position number doesn't matter.

Lubrication Instructions

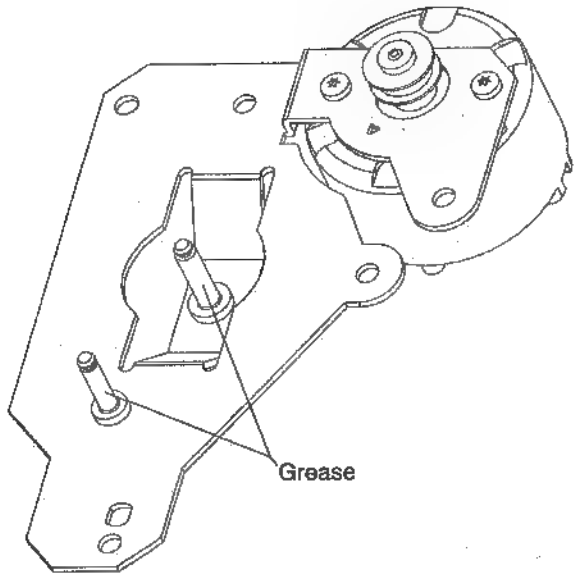
CHASSIS



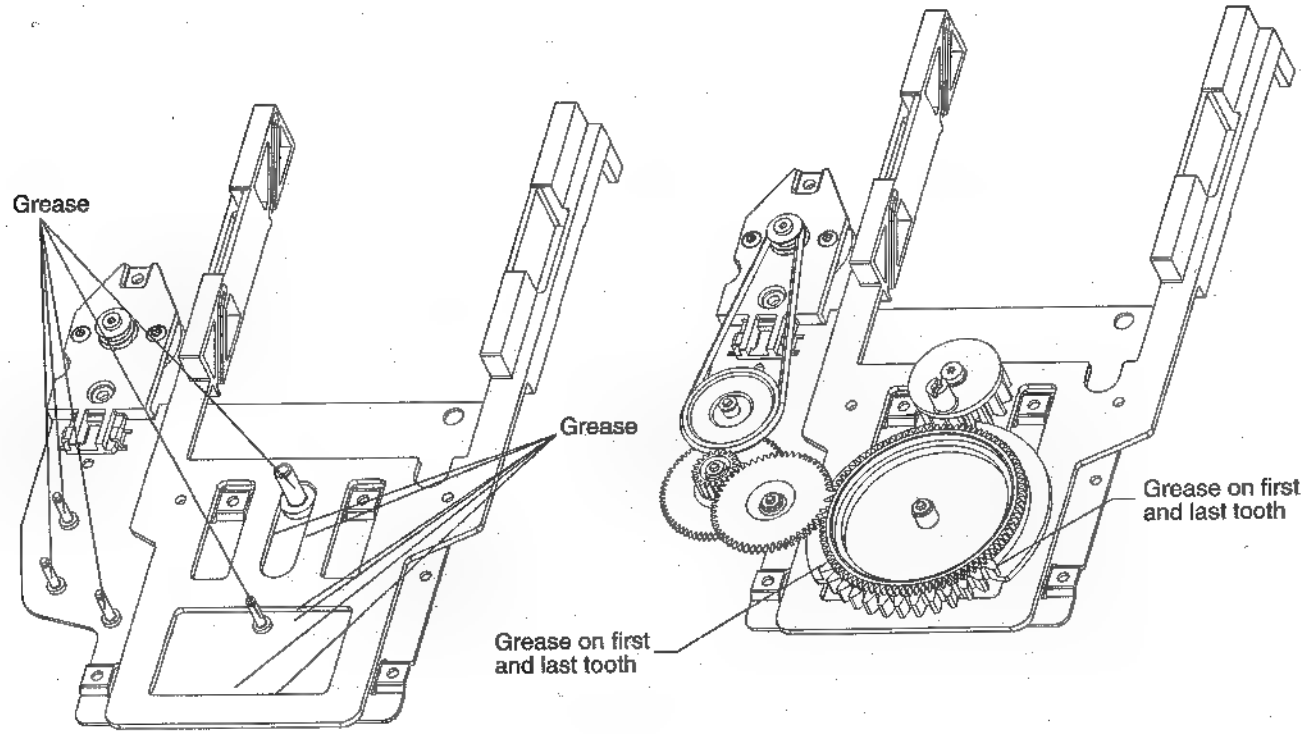
DRAWER



DRAWER MECHANISM



DISC CHANGE MECHANISM



Use only grease **Polylub GLY 801** service codenumber 4822 390 10136

WARNING

CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CDM MECHANISM. THAT´S WHY, BESIDES THE SAFETY MEASURES LIKE
- ***SWITCH OFF POWER SUPPLY***
- ***ESD PROTECTION***

ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

The following steps have to be done when replacing the CDM mechanism:

1. Disconnect old CD drive flexfoil from printed board
2. Connect paperclip to CD drive flexfoil to short-circuit flexfoil (fig.1)
3. Short-circuit printed board with **brass-sheet (4822 321 11197)** plugged into the flexfoil connector (fig.2)
4. Remove old CD drive mechanism
5. Position new CD mechanism in its studs
6. Remove short-circuit from printed board connector
7. Remove short-circuit from flexfoil of new CD drive
8. Connect new flexfoil to print connector (fig.3)

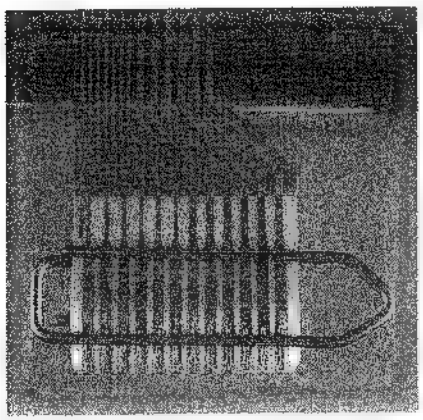


fig.1

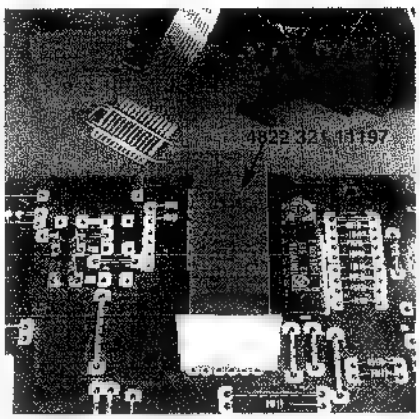


fig.2

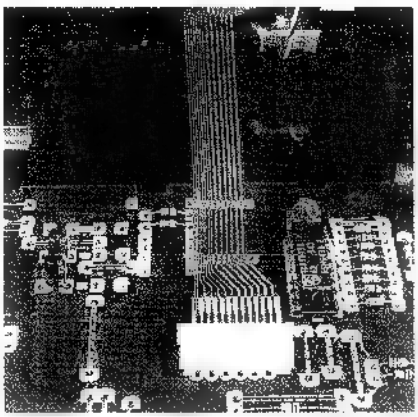
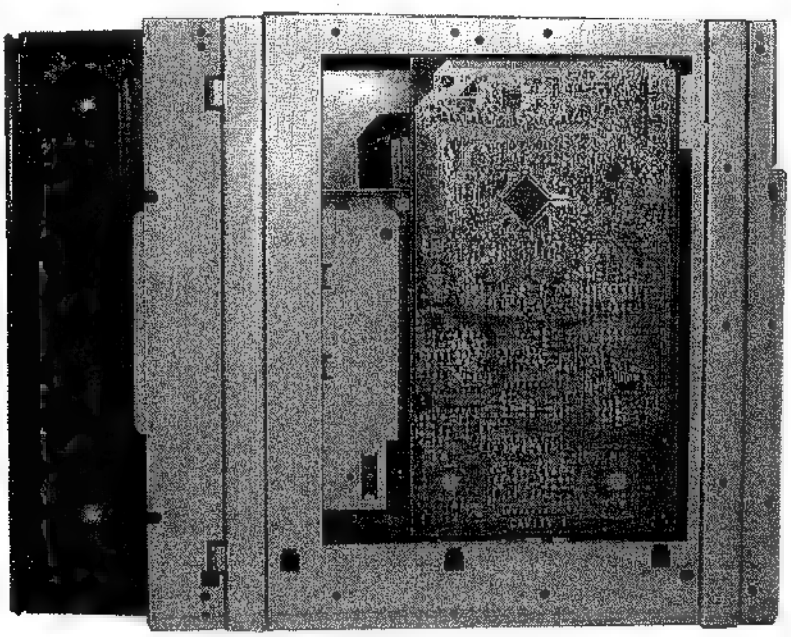


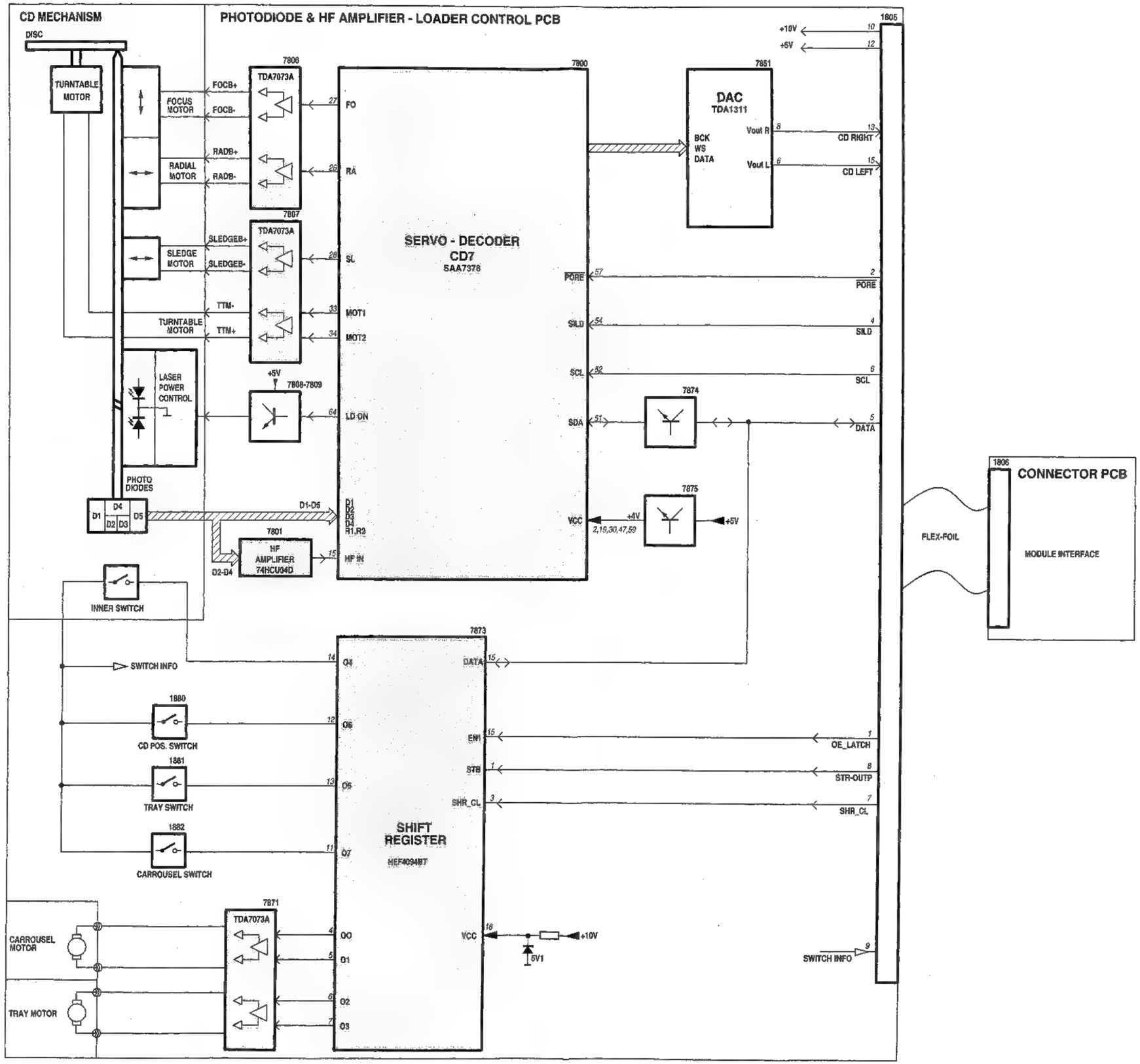
fig.3

Service Position

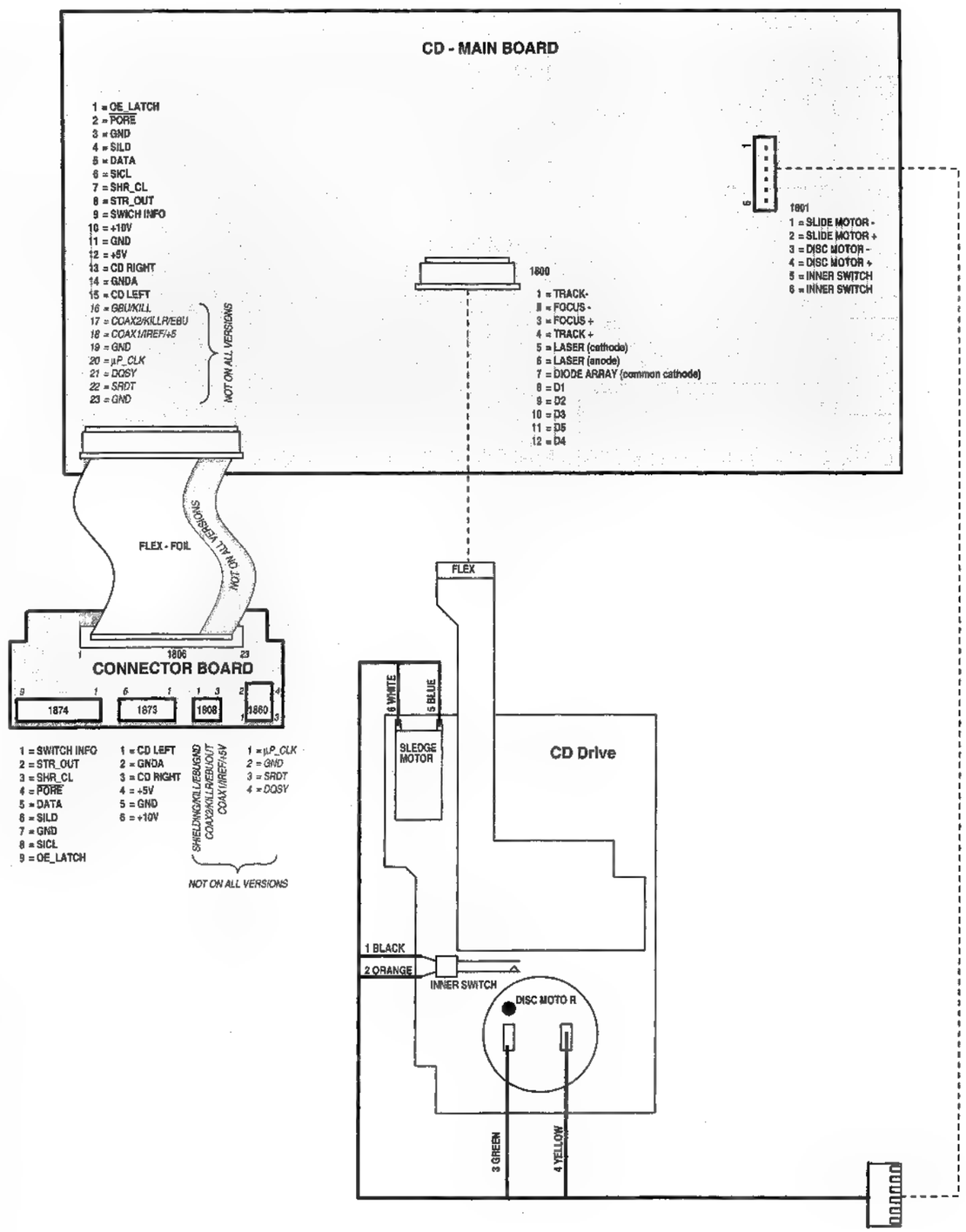


10-7

Blockdiagram



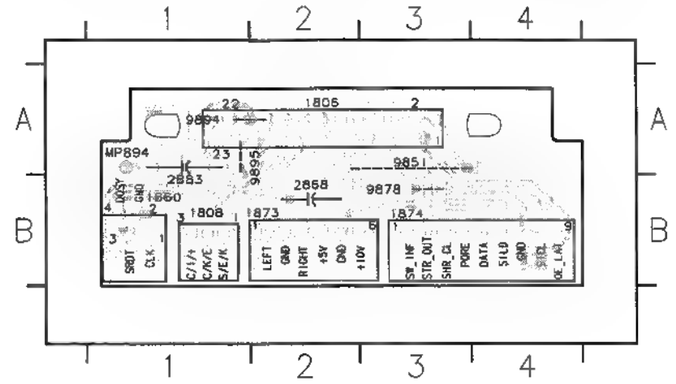
Wiring diagram



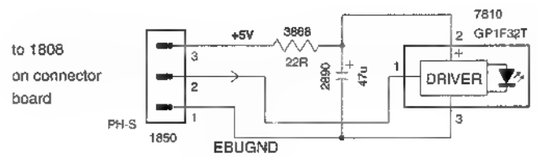
Remarks

Connector Board Copperside view

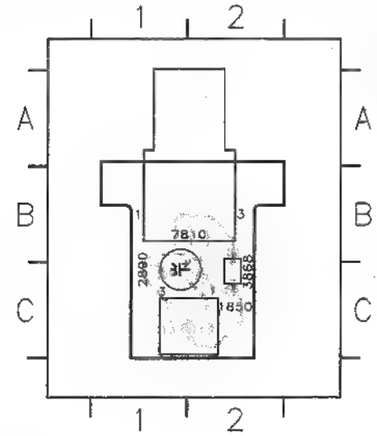
1806 A2
1808 B1
1860 B1
1873 B2
1874 B3
2868 B2
2883 B1
9851 A3
9878 B3
9894 A1
9895 A2
MP894 A1



Circuit Diagram Optical out



Component Layout Optical out

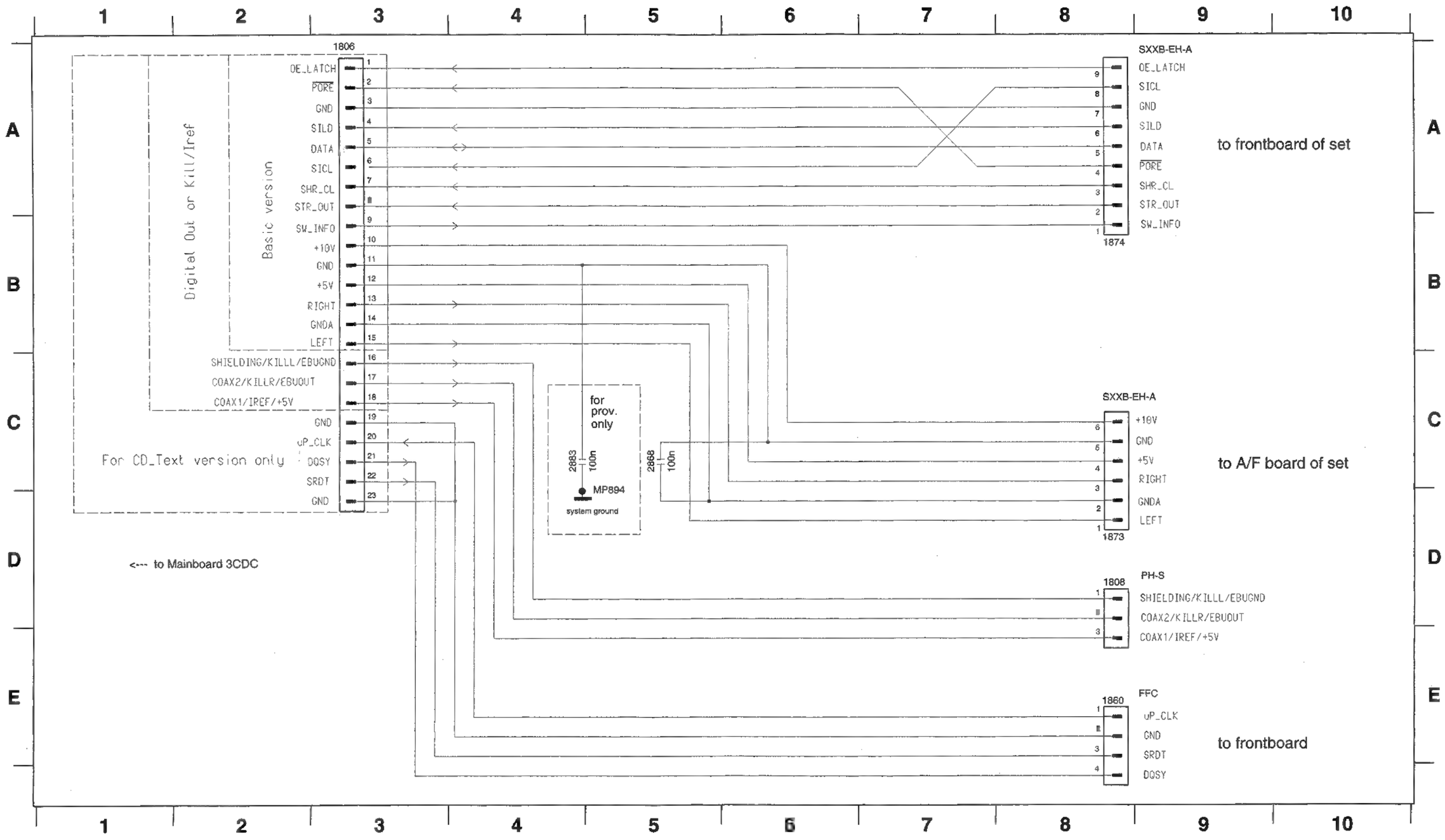


NOT ON ALL VERSIONS

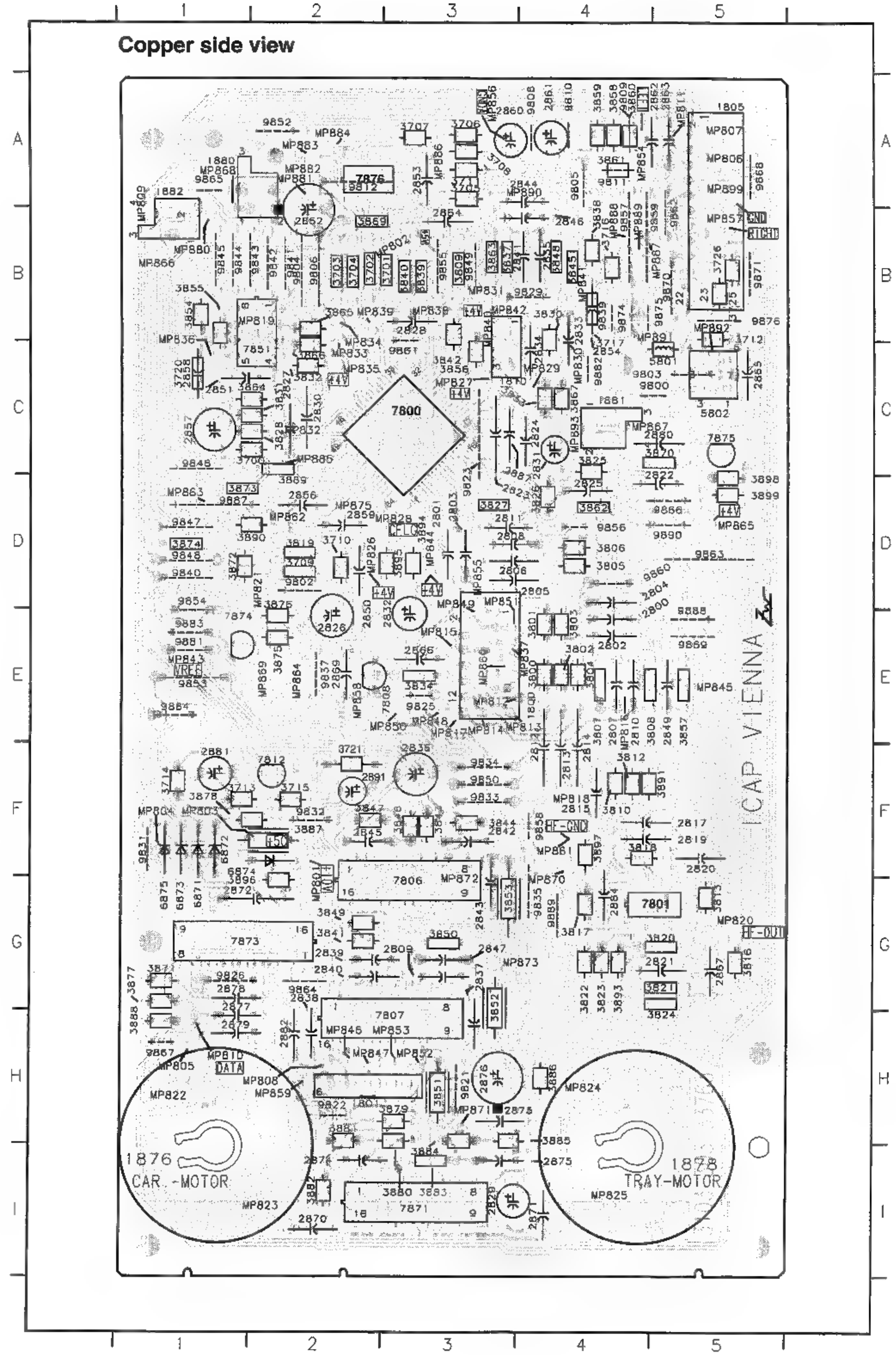
10-9

Circuit diagram Connector Board

1806 A3 1860 E8 1874 B8 2883 C4
1808 D8 1873 D8 2868 C5



Copper side view



1800 E3	2869 E2	3842 B3	9802 D2
1801 H2	2870 I2	3843 F3	9803 C5
1805 B5	2871 I4	3844 F3	9804 B2
1810 C3	2872 G2	3845 B4	9805 A4
1876 I1	2873 H3	3846 F3	9806 B2
1878 I4	2874 I2	3847 F2	9808 A4
1880 B2	2875 I3	3848 B4	9809 A4
1881 C4	2876 H3	3849 G2	9810 A4
1882 B1	2877 G1	3850 G3	9811 A4
2800 D4	2878 G1	3851 H3	9812 A2
2801 D3	2879 H1	3852 G3	9821 H3
2802 E4	2880 C5	3853 G3	9822 H2
2803 D3	2881 F1	3854 B1	9823 C3
2804 D4	2882 H2	3855 B1	9825 E3
2805 D3	2884 G4	3856 C3	9826 G1
2806 D3	2887 C3	3857 E5	9829 B4
2807 E4	3700 C1	3858 A4	9831 F1
2808 D3	3701 B3	3859 A4	9832 F2
2809 G3	3702 B2	3860 A4	9833 F3
2810 E4	3703 B2	3861 A4	9834 F3
2811 D3	3704 B2	3862 D4	9835 G4
2812 F4	3705 A3	3863 B3	9837 E2
2813 F4	3706 A3	3864 C1	9839 B4
2814 F4	3707 A3	3865 B2	9840 D1
2815 F4	3708 A3	3866 C2	9841 B2
2817 F4	3709 D2	3867 C4	9842 B2
2819 F4	3710 D2	3869 B2	9843 B2
2820 F5	3711 A3	3870 C5	9844 B1
2821 G5	3712 B5	3871 G1	9845 B1
2822 D5	3713 F1	3872 D1	9846 C1
2823 C3	3714 F1	3873 D1	9847 D1
2824 C4	3715 F2	3874 D1	9848 D1
2825 D4	3716 B4	3875 E2	9849 B3
2826 D2	3717 B4	3876 E2	9850 F3
2827 C2	3720 C1	3877 G1	9852 A2
2828	3725 B5	3878 F2	9853 E1
2829 I3	3726 B5	3879 H3	9854 D1
2830 C2	3800 E4	3880 H3	9855 B3
2831 C4	3801 E4	3881 H2	9856 D4
2832 E3	3802 E4	3882 I2	9857 B4
2833 B4	3803 E4	3883 I3	9858 F4
2834 C3	3804 E4	3884 H3	9859 B4
2835 B4	3805 D4	3885 H3	9860 D4
2836 F3	3806 D4	3886 H4	9861 B3
2837 H3	3807 E4	3887 F2	9862 B5
2838 H2	3808 E4	3888 H1	9863 D5
2839 G2	3809 B3	3889 C2	9864 G2
2840 G2	3810 F4	3890 D1	9865 A1
2841 B3	3812 F4	3891 F4	9866 D5
2842 F3	3813 G5	3893 G4	9867 H1
2843 G3	3816 G5	3894 D3	9868 A5
2844 B4	3817 G4	3895 D3	9869 E5
2845 F2	3818 F4	3896 G2	9870 B5
2846 B4	3819 D2	3897 F4	9871 B5
2847 G3	3820 G5	3898 D5	9874 B4
2849 E5	3821 G5	3899 D5	9875 B4
2850 D2	3822 G4	5801 B5	9876 B5
2851 C1	3823 G4	5802 C5	9881 E1
2852 A2	3824 G5	6871 F1	9882 C4
2853 A3	3825 C4	6872 F1	9883 E1
2854 B4	3826 D4	6873 F1	9884 E1
2856 D2	3827 D3	6874 F2	9887 D1
2857 C1	3828 C1	6875 F1	9888 E5
2858 C1	3830 B4	7806 G3	9889 G4
2859 D2	3831 C1	7807 H3	9890 D5
2860 A3	3832 C2	7808 E2	
2861 A4	3833 C4	7812 F2	
2862 A4	3834 E3	7851 B2	
2863 A5	3837 B3	7871 I3	
2864 B3	3838 B4	7873 G1	
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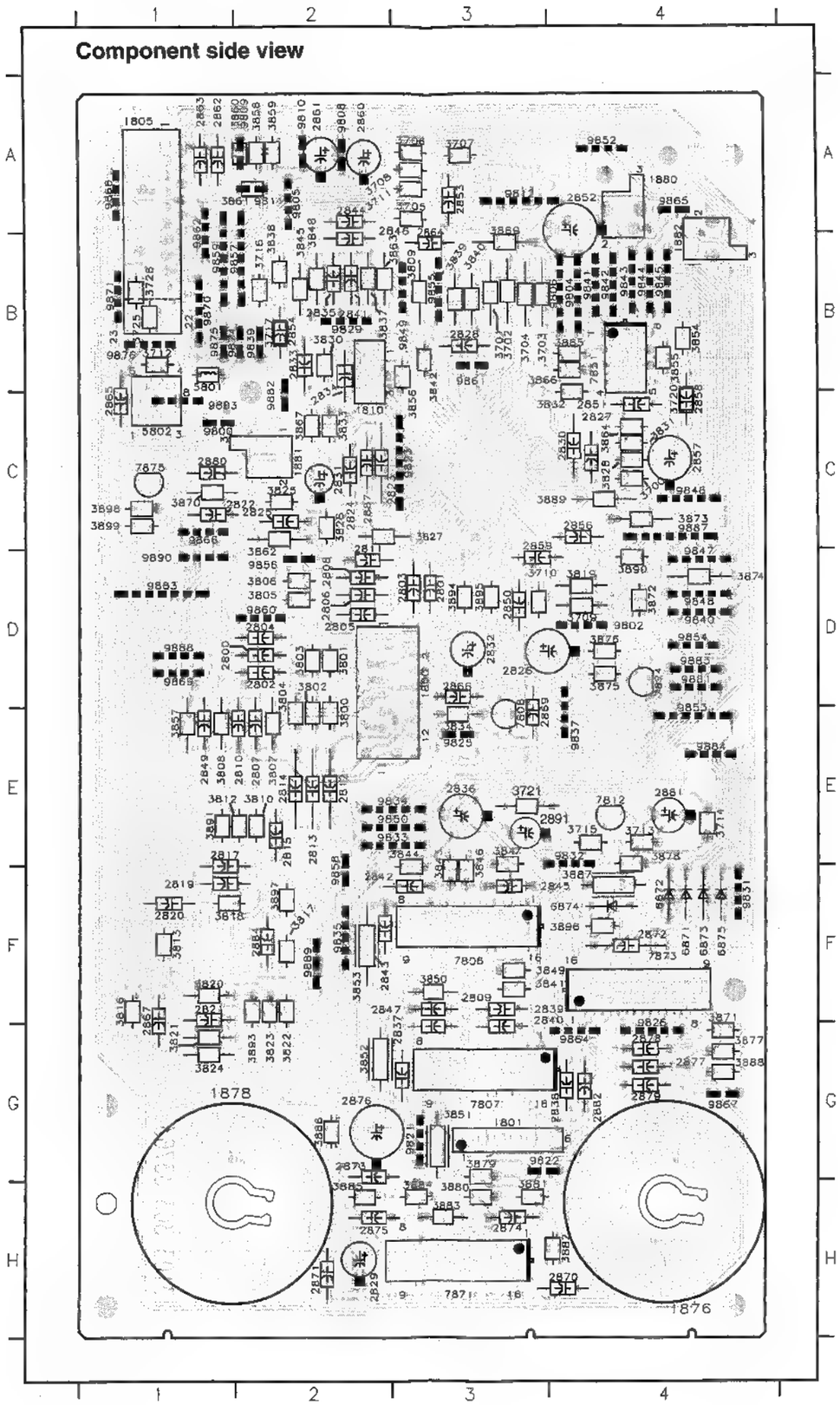
2867 G5	3841 G2	9800 C4	



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1805 A1	2871 H2	3844 F3	9804 B4
1810 B2	2872 F4	3845 B2	9805 A2
1876 H4	2873 G2	3846 F3	9806 B4
1878 H1	2874 H3	3847 E3	9808 A2
1880 B4	2875 H2	3848 B2	9809 A2
1881 C2	2876 G3	3849 F3	9810 A2
1882 B4	2877 G4	3850 F3	9811 A2
2800 D2	2878 G4	3851 G3	9812 A3
2801 D3	2879 G4	3852 G2	9821 G3
2802 D2	2880 C1	3853 F2	9822 G3
2803 D3	2881 E4	3854 B4	9823 C3
2804 D2	2882 G4	3855 B4	9825 E3
2805 D2	2884 F2	3856 B3	9826 G4
2806 D2	2887 C2	3857 E1	9829 B2
2807 E2	3700 C4	3858 A2	9831 F4
2808 D2	3701 B3	3859 A2	9832 E4
2809 F3	3702 B3	3860 A2	9833 E2
2810 E2	3703 B3	3861 A2	9834 E2
2811 D2	3704 B3	3862 C2	9835 F2
2812 E2	3705 A3	3863 B2	9837 E4
2813 E2	3706 A3	3864 C4	9839 B2
2814 E2	3707 A3	3865 B4	9840 D4
2815 E2	3708 A3	3866 B4	9841 B4
2817 F1	3709 D4	3867 C2	9842 B4
2819 F1	3710 D3	3869 B3	9843 B4
2820 F1	3711 A3	3870 C1	9844 B4
2821 G1	3712 B1	3871 G4	9845 B4
2822 C1	3713 E4	3872 D4	9846 C4
2823 C2	3714 E4	3873 C4	9847 D4
2824 C2	3715 E4	3874 D4	9848 D4
2825 C2	3716 B2	3875 D4	9849 B3
2826 D3	3717 B2	3876 D4	9850 E2
2827 C4	3720 C4	3877 G4	9852 A4
2828 B3	3725 B1	3878 E4	9853 E4
2829 H2	3726 B1	3879 G3	9854 D4
2830 C4	3800 E2	3880 H3	9855 B3
2831 C2	3801 D2	3881 H3	9856 D2
2832 D3	3802 E2	3882 H4	9857 B2
2833 B2	3803 D2	3883 H3	9858 F2
2834 B2	3804 E2	3884 H3	9859 B1
2835 B2	3805 D2	3885 H2	9860 D2
2836 E3	3806 D2	3886 G2	9861 B3
2837 G2	3807 E2	3887 F4	9862 A1
2838 G4	3808 E1	3888 G4	9863 D1
2839 F3	3809 B3	3889 C4	9864 G4
2840 F3	3810 E2	3890 D4	9865 A4
2841 B2	3812 E2	3891 E1	9866 C1
2842 F3	3813 F1	3893 F2	9867 G4
2843 F2	3816 F1	3894 D3	9868 A1
2844 B2	3817 F2	3895 D3	9869 D1
2845 F3	3818 F1	3896 F4	9870 B1
2846 B2	3819 D4	3897 F2	9871 B1
2847 F3	3820 F1	3898 C1	9874 B2
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2852 A4	3824 G1	6871 F4	9882 C2
2853 A3	3825 C2	6872 F4	9883 D4
2854 B2	3826 C2	6873 F4	9884 E4
2856 C4	3827 C2	6874 F4	9887 C4
2857 C4	3828 C4	6875 F4	9888 D1
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2859 C3	3831 C4	7807 G3	9890 D1
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2861 A2	3833 C2	7812 E4	
2862 A1	3834 E3	7851 B4	
2863 A1	3837 B2	7871 H3	
2864 B3	3838 B2	7873 F4	
2865 C1	3839 B3	7874 D4	
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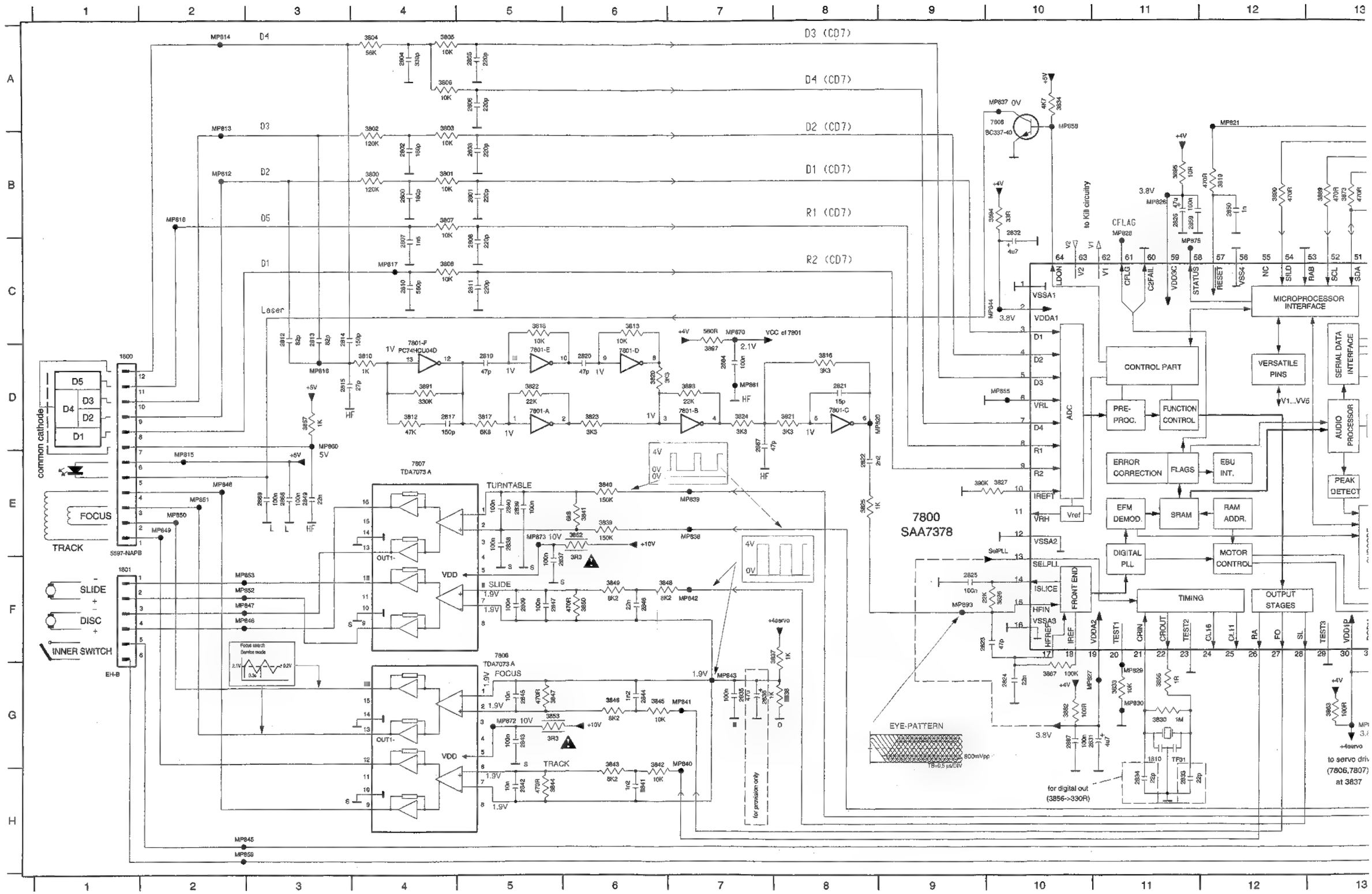
2867 F1	3841 F3	9800 C1	

10-11

Circuit Diagram Main Board part1



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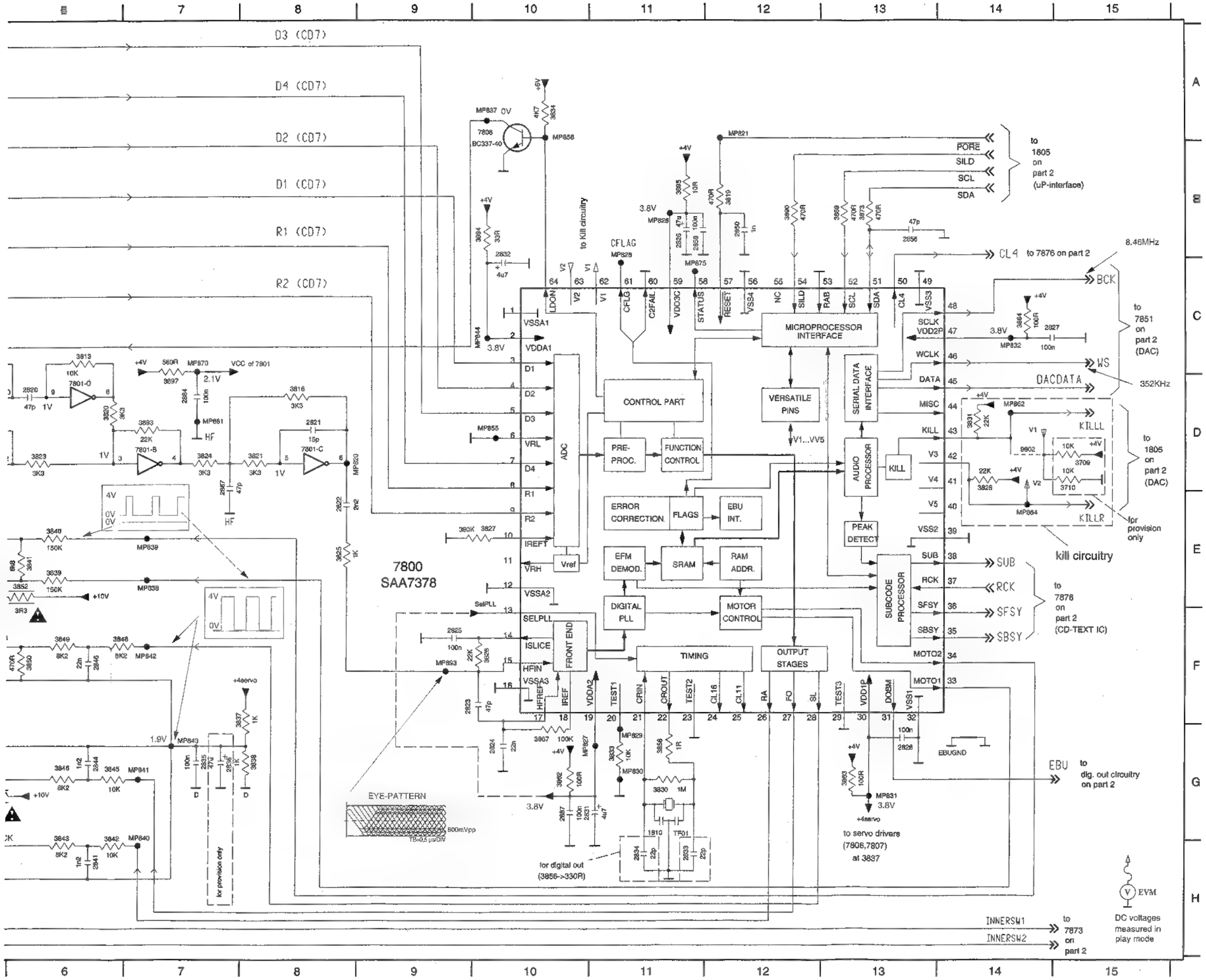

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1810 G11
2800 B4
2801 B5
2802 B4
2803 B5
2804 A4
2805 A5
2806 A5
2807 C4
2808 C5
2809 F5
2810 C4
2811 C5
2812 C3
2813 C3
2814 C3
2815 D3
2817 D4
2819 D5
2820 D6
2821 D8
2822 E8
2823 F9
2824 G9
2825 F9
2826 B11
2827 C14
2828 G13
2831 G10
2832 B10
2833 H11
2834 H11
2835 G7
2836 G7
2837 F5
2838 E5
2839 E5
2840 E5
2841 H6
2842 H5
2843 G5
2844 G6
2845 G5
2846 F6
2847 F5
2849 E3
2850 B12
2856 B13
2859 B11
2866 E3
2867 D7
2869 E3
2884 D7
2887 G10
3709 D15
3710 D15
3800 B4
3801 B4
3802 A4
3803 A4
3804 A4
3805 A4
3806 A4
3807 B4
3808 C4
3810 D4
3812 D4
3813 C6
3816 D8
3817 D5
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3820 D6
3821 D8
3822 D5
3823 D6
3824 D7
3825 E8
3826 F10
3827 E10
3828 D14
3830 G11
3831 D14
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3850 F6
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3863 G13
3864 C14
3867 G10
3873 B13
3889 B13
3890 B12
3891 D4
3893 D7
3894 B10
3895 B11
3897 D7
7800 E9
7801-A D5
7801-B D7
7801-C D8
7801-D D6
7801-E D5
7801-F D4
7806 G5
7807 E4
7808 B10
9802 D14
MP812 B2
MP813 A2
MP814 A2
MP815 E2
MP816 B2
MP817 C4
MP818 D3
MP820 D8
MP821 B12
MP826 B11
MP827 G10
MP828 B11
MP829 G11
MP830 G11
MP831 G13
MP832 C14
MP837 B10
MP838 E6
MP839 E6
MP840 G7
MP841 G7
MP842 F7
MP843 G7
MP844 C10
MP845 H3
MP846 F2
MP847 F2
MP848 E2
MP849 E2
MP850 E2
MP851 E2
MP852 F2
MP853 F2
MP855 D10
MP858 B10
MP859 H3
MP860 D3
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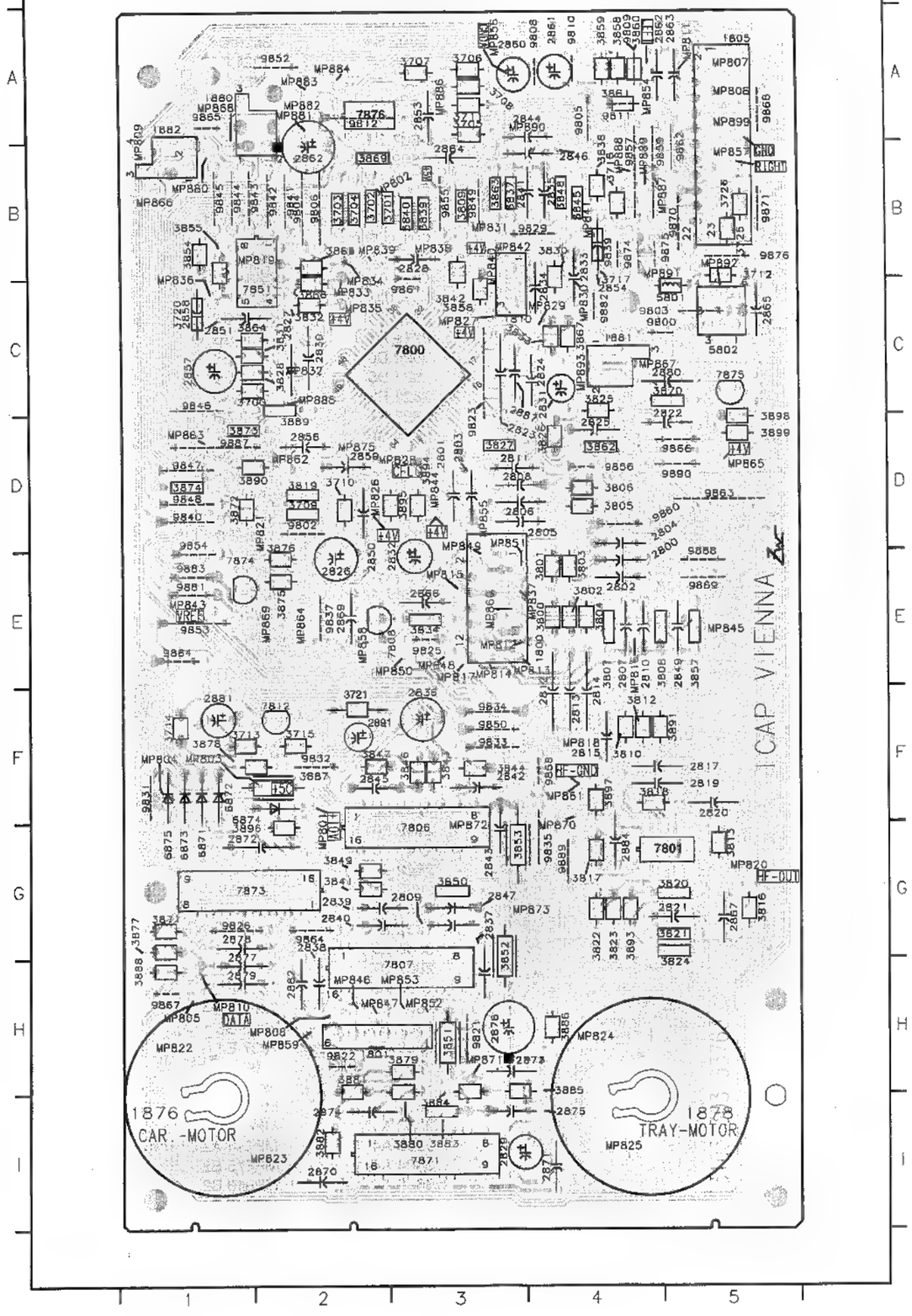
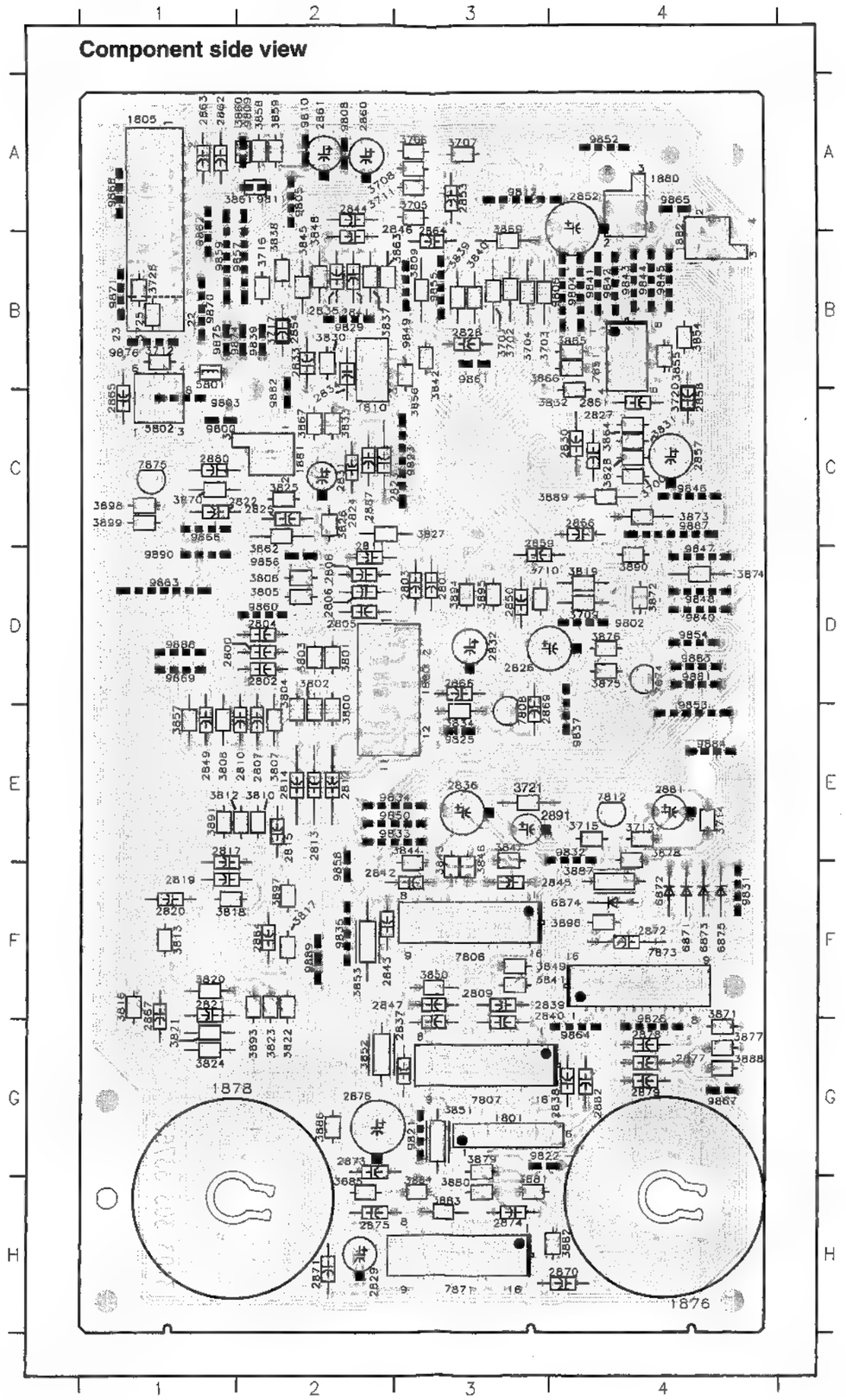
MP862 C14
MP864 E14
MP870 C7
MP872 G5
MP873 E5
MP875 C11
MP893 F9

Copper side view



CS 53 011

1800 E3	2869 E2	3842 B3	9802 D2
1801 H2	2870 I2	3843 F3	9803 C5
1805 B5	2871 I4	3844 F3	9804 B2
1810 C3	2872 G2	3845 B4	9805 A4
1876 I1	2873 H3	3846 F3	9806 B2
1878 I4	2874 I2	3847 F2	9808 A4
1880 B2	2875 I3	3848 B4	9809 A4
1881 C4	2876 H3	3849 G2	9810 A4
1882 B1	2877 G1	3850 G3	9811 A4
2800 D4	2878 G1	3851 H3	9812 A2
2801 D3	2879 H1	3852 G3	9821 H3
2802 E4	2880 C5	3853 G3	9822 H2
2803 D3	2881 F1	3854 B1	9823 C3
2804 D4	2882 H2	3855 B1	9825 E3
2805 D3	2884 G4	3856 C3	9826 G1
2806 D3	2887 C3	3857 E5	9829 B4
2807 E4	3700 C1	3858 A4	9831 F1
2808 D3	3701 B3	3859 A4	9832 F2
2809 G3	3702 B2	3860 A4	9833 F3
2810 E4	3703 B2	3861 A4	9834 F3
2811 D3	3704 B2	3862 D4	9835 G4
2812 F4	3705 A3	3863 B3	9837 E2
2813 F4	3706 A3	3864 C1	9839 B4
2814 F4	3707 A3	3865 B2	9840 D1
2815 F4	3708 A3	3866 C2	9841 B2
2817 F4	3709 D2	3867 C4	9842 B2
2819 F4	3710 D2	3869 B2	9843 B2
2820 F5	3711 A3	3870 C5	9844 B1
2821 G5	3712 B5	3871 G1	9845 B1
2822 D5	3713 F1	3872 D1	9846 C1
2823 C3	3714 F1	3873 D1	9847 D1
2824 C4	3715 F2	3874 D1	9848 D1
2825 D4	3716 B4	3875 E2	9849 B3
2826 D2	3717 B4	3876 E2	9850 F3
2827 C2	3720 C1	3877 G1	9852 A2
2828 B3	3725 B5	3878 F2	9853 E1
2829 I3	3726 B5	3879 H3	9854 D1
2830 C2	3800 E4	3880 H3	9855 B3
2831 C4	3801 E4	3881 H2	9856 D4
2832 E3	3802 E4	3882 I2	9857 B4
2833 B4	3803 E4	3883 I3	9858 F4
2834 C3	3804 E4	3884 H3	9859 B4
2835 B4	3805 D4	3885 H3	9860 D4
2836 F3	3806 D4	3886 H4	9861 B3
2837 H3	3807 E4	3887 F2	9862 B5
2838 H2	3808 E4	3888 H1	9863 D5
2839 G2	3809 B3	3889 C2	9864 G2
2840 G2	3810 F4	3890 D1	9865 A1
2841 B3	3812 F4	3891 F4	9866 D5
2842 F3	3813 G5	3893 G4	9867 H1
2843 G3	3816 G5	3894 D3	9868 A5
2844 B4	3817 G4	3895 D3	9869 E5
2845 F2	3818 F4	3896 G2	9870 B5
2846 B4	3819 D2	3897 F4	9871 B5
2847 G3	3820 G5	3898 D5	9874 B4
2849 E5	3821 G5	3899 D5	9875 B4
2850 D2	3822 G4	5801 B5	9876 B5
2851 C1	3823 G4	5802 C5	9881 E1
2852 A2	3824 G5	6871 F1	9882 C4
2853 A3	3825 C4	6872 F1	9883 E1
2854 B4	3826 D4	6873 F1	9884 E1
2856 D2	3827 D3	6874 F2	9887 D1
2857 C1	3828 C1	6875 F1	9888 E5
2858 C1	3830 B4	7806 G3	9889 G4
2859 D2	3831 C1	7807 H3	9890 D5
2860 A3	3832 C2	7808 E2	
2861 A4	3833 C4	7812 F2	
2862 A4	3834 E3	7851 B2	
2863 A5	3837 B3	7871 I3	
2864 B3	3838 B4	7873 G1	
2865 C5	3839 B3	7874 E1	
2866 E3	3840 B3	7875 C5	
2867 G5	3841 G2	9800 C4	



10-12

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1801 G3	2870 H4	3843 F3	9803 C1
1805 A1	2871 H2	3844 F3	9804 B4
1810 B2	2872 F4	3845 B2	9805 A2
1876 H4	2873 G2	3846 F3	9806 B4
1878 H1	2874 H3	3847 E3	9808 A2
1880 B4	2875 H2	3848 B2	9809 A2
1881 C2	2876 G3	3849 F3	9810 A2
1882 B4	2877 G4	3850 F3	9811 A2
2800 D2	2878 G4	3851 G3	9812 A3
2801 D3	2879 G4	3852 G2	9821 G3
2802 D2	2880 C1	3853 F2	9822 G3
2803 D3	2881 E4	3854 B4	9823 C3
2804 D2	2882 G4	3855 B4	9825 E3
2805 D2	2884 F2	3856 B3	9826 G4
2806 D2	2887 C2	3857 E1	9829 B2
2807 E2	3700 C4	3858 A2	9831 F4
2808 D2	3701 B3	3859 A2	9832 E4
2809 F3	3702 B3	3860 A2	9833 E2
2810 E2	3703 B3	3861 A2	9834 E2
2811 D2	3704 B3	3862 C2	9835 F2
2812 E2	3705 A3	3863 B2	9837 E4
2813 E2	3706 A3	3864 C4	9839 B2
2814 E2	3707 A3	3865 B4	9840 D4
2815 E2	3708 A3	3866 B4	9841 B4
2817 F1	3709 D4	3867 C2	9842 B4
2819 F1	3710 D3	3869 B3	9843 B4
2820 F1	3711 A3	3870 C1	9844 B4
2821 G1	3712 B1	3871 G4	9845 B4
2822 C1	3713 E4	3872 D4	9846 C4
2823 C2	3714 E4	3873 C4	9847 D4
2824 C2	3715 E4	3874 D4	9848 D4
2825 C2	3716 B2	3875 D4	9849 B3
2826 D3	3717 B2	3876 D4	9850 E2
2827 C4	3720 C4	3877 G4	9852 A4
2828 B3	3725 B1	3878 E4	9853 E4
2829 H2	3726 B1	3879 G3	9854 D4
2830 C4	3800 E2	3880 H3	9855 B3
2831 C2	3801 D2	3881 H3	9856 D2
2832 D3	3802 E2	3882 H4	9857 B2
2833 B2	3803 D2	3883 H3	9858 F2
2834 B2	3804 E2	3884 H3	9859 B1
2835 B2	3805 D2	3885 H2	9860 D2
2836 E3	3806 D2	3886 G2	9861 B3
2837 G2	3807 E2	3887 F4	9862 A1
2838 G4	3808 E1	3888 G4	9863 D1
2839 F3	3809 B3	3889 C4	9864 G4
2840 F3	3810 E2	3890 D4	9865 A4
2841 B2	3812 E2	3891 E1	9866 C1
2842 F3	3813 F1	3893 F2	9867 G4
2843 F2	3816 F1	3894 D3	9868 A1
2844 B2	3817 F2	3895 D3	9869 D1
2845 F3	3818 F1	3896 F4	9870 B1
2846 B2	3819 D4	3897 F2	9871 B1
2847 F3	3820 F1	3898 C1	9874 B2
2849 E1	3821 G1	3899 C1	9875 B1
2850 D3	3822 F2	5801 B1	9876 B1
2851 C4	3823 F2	5802 C1	9881 D4
2852 A4	3824 G1	6871 F4	9882 C2
2853 A3	3825 C2	6872 F4	9883 D4
2854 B2	3826 C2	6873 F4	9884 E4
2856 C4	3827 C2	6874 F4	9887 C4
2857 C4	3828 C4	6875 F4	9888 D1
2858 C4	3830 B2	7806 F3	9889 F2
2859 C3	3831 C4	7807 G3	9890 D1
2860 A2	3832 C4	7808 E3	
2861 A2	3833 C2	7812 E4	
2862 A1	3834 E3	7851 B4	
2863 A1	3837 B2	7871 H3	
2864 B3	3838 B2	7873 F4	
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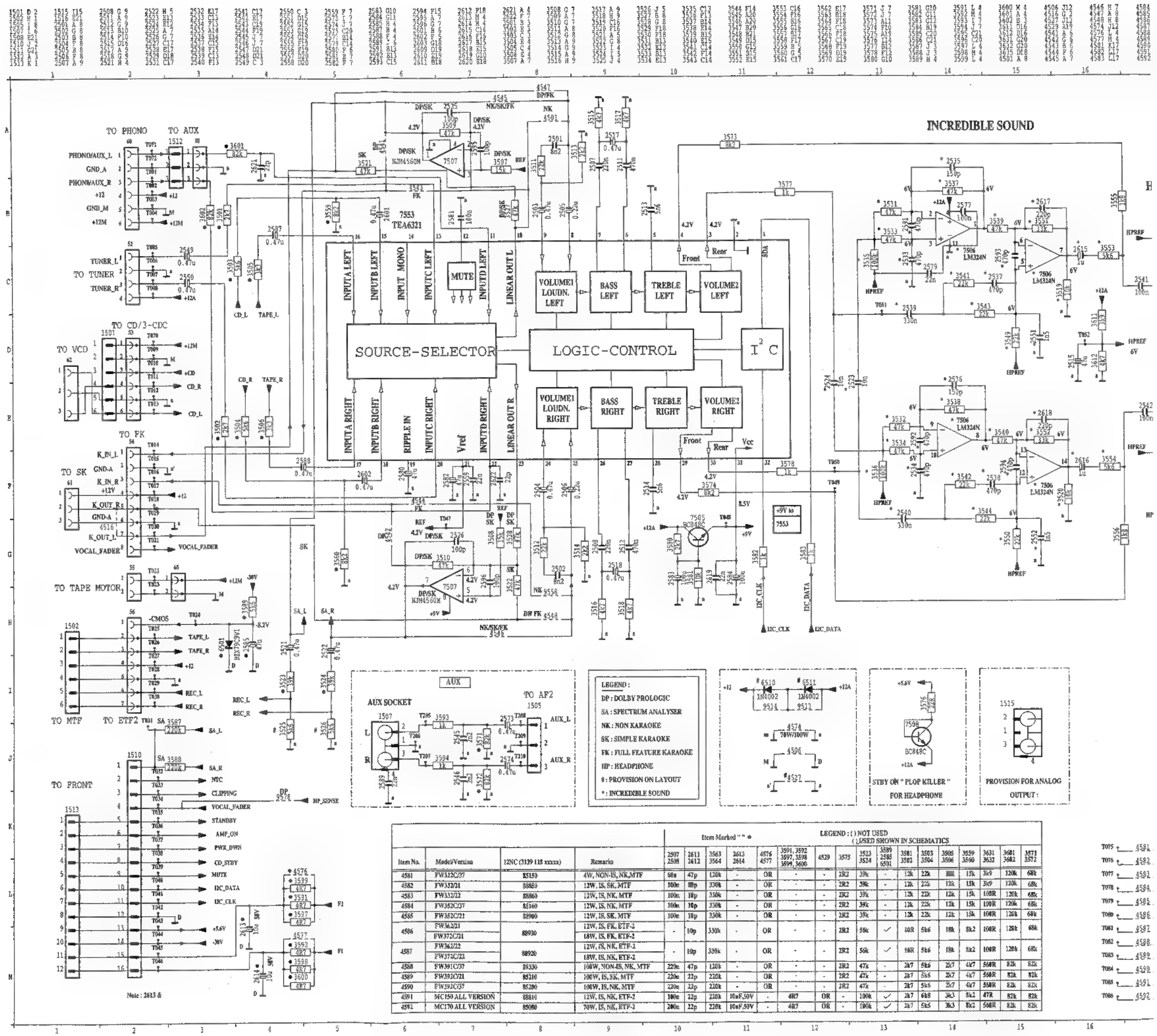
2866 E3	3840 B3	7875 C1	
2867 F1	3841 F3	9800 C1	

AF2 CIRCUIT



Item No.	Model/Version	12NC (3139 115 xxxxx)	Remarks	Item Marked " * " 2907 2608	2611 2612	3563 3564	2613 2614	4576 4577	3591, 3592 3597, 3598 3599, 3600	4529	3575	3523 3524	3589 2585 6501	3581 3582	3503 3504	3505 3506	3539 3560	3631 3632	3681 3682	3571 3572
LEGEND : ( ) NOT USED ( ) USED SHOWN IN SCHEMATICS																				
4581	FW332C/37	85150	4W, NON-IS, NK,MTF	68n	47p	150k	-	OR	-	-	2R2	39k	-	12k	22k	(15k)	15k	3k9	120k	68k
4582	FW332/21	88850	12W, IS, SK, MTF	100n	(8p)	330k	-	OR	-	-	2R2	39k	-	12k	22k	12k	15k	3k9	120k	68k
4583	FW332/22	88860	12W, IS, NK, MTF	100n	10p	330k	-	OR	-	-	2R2	39k	-	12k	22k	12k	15k	100R	120k	68k
4584	FW362C/37	85160	12W, IS, NK, MTF	100n	10p	330k	-	OR	-	-	2R2	39k	-	12k	22k	12k	15k	100R	120k	68k
4585	FW352C/21	88900	12W, IS, SK, MTF	100n	10p	330k	-	OR	-	-	2R2	39k	-	12k	22k	12k	15k	100R	120k	68k
4586	FW362/21 FW372C/21	88930	12W, IS, FK, ETF-2 18W, IS, FK, ETF-2	-	10p	330k	-	OR	-	-	2R2	56k	✓	10R	5k6	18k	8k2	100R	120k	68k
4587	FW362/22 FW372C/22	88920	12W, IS, NK, ETF-2 18W, IS, NK, ETF-2	-	10p	330k	-	OR	-	-	2R2	56k	✓	10R	5k6	18k	8k2	100R	120k	68k
4588	FW391C/37	89330	10W, NON-IS, NK, MTF	220n	47p	120k	-	OR	-	-	2R2	47k	-	2k7	5k6	2k7	4k7	560R	82k	82k
4589	FW392C/21	85210	10W, IS, SK, MTF	220n	22p	220k	-	OR	-	-	2R2	47k	-	2k7	5k6	2k7	4k7	560R	82k	82k
4590	FW392C/37	85200	10W, IS, NK, MTF	220n	22p	220k	-	OR	-	-	2R2	47k	-	2k7	5k6	2k7	4k7	560R	82k	82k
4591	MC150 ALL VERSION	88810	12W, IS, NK, ETF-2	100n	22p	220k	10nF,50V	-	4R7	OR	-	100k	✓	2k7	6k8	3k3	8k2	47R	82k	82k
4592	MC170 ALL VERSION	85090	70W, IS, NK, ETF-2	200n	22p	220k	10nF,50V	-	4R7	OR	-	100k	✓	2k7	5k6	3k3	8k2	560R	82k	82k

2550 C 3	2559 F 7	2583 G10	2594 F15	2612 F18	2621 A 4	3508 G 7	3517 A 9	3526 J 5	3535 C13	3544 F14	3553 C16	3562 E17	3571 J 7	3581 G10	3591 L 4	3600 M 4	4506 J12	4546 H 7	4584 L17	51 A 3	56 H 2	6510 I11	7506 E14	7516 B20
2551 D15	2573 I 7	2584 G11	2595 A 7	2613 M 4	2622 F 7	3509 A 7	3518 H 9	3527 B 8	3536 F13	3545 A20	3554 F16	3563 B18	3572 J 7	3582 G11	3592 M 4	3601 A 4	4516 G 2	4547 A 8	4585 L17	52 B 2	57 H21	6511 I12	7506 F15	7553 B 6
2552 G15	2574 J 7	2585 H 4	2596 G 7	2614 M 4	3501 B 3	3510 G 7	3519 C16	3528 G 8	3537 B14	3546 A20	3555 B16	3564 F18	3573 A11	3583 G12	3593 I 7	3602 B 3	4527 J12	4548 H 8	4586 L17	53 D 2	58 K21	7501 C18	7507 A 7	9513 I12
2553 G19	2575 C20	2587 B 4	2601 B 6	2615 C16	3502 E 3	3511 A 8	3520 F16	3529 F18	3538 E14	3547 B20	3556 G16	3565 C18	3574 F10	3584 B19	3594 J 7	3611 D16	4529 A19	4574 J12	4587 M17	54 E 2	59 K21	7501 E18	7507 H 7	9514 I11
2554 G19	2577 B14	2588 F 4	2602 F 5	2616 F16	3503 C 3	3512 G 8	3521 A 5	3530 F18	3539 B15	3548 B21	3557 B17	3566 F18	3575 A19	3585 C20	3595 C21	3612 D16	4541 A 6	4576 L 4	4588 M17	55 G 2	60 A 2	7503 D19	7508 J14	9558 H 8
2555 F19	2579 C14	2589 J 6	2603 G18	2617 B15	3504 E 4	3513 A 9	3522 G 8	3531 B13	3540 E15	3549 D15	3558 F17	3567 C19	3576 I14	3586 C21	3596 C20	3631 G20	4542 G 6	4577 K 4	4589 M17	5501 E18	61 F 1	7504 E19	7512 B20	9578 K 4
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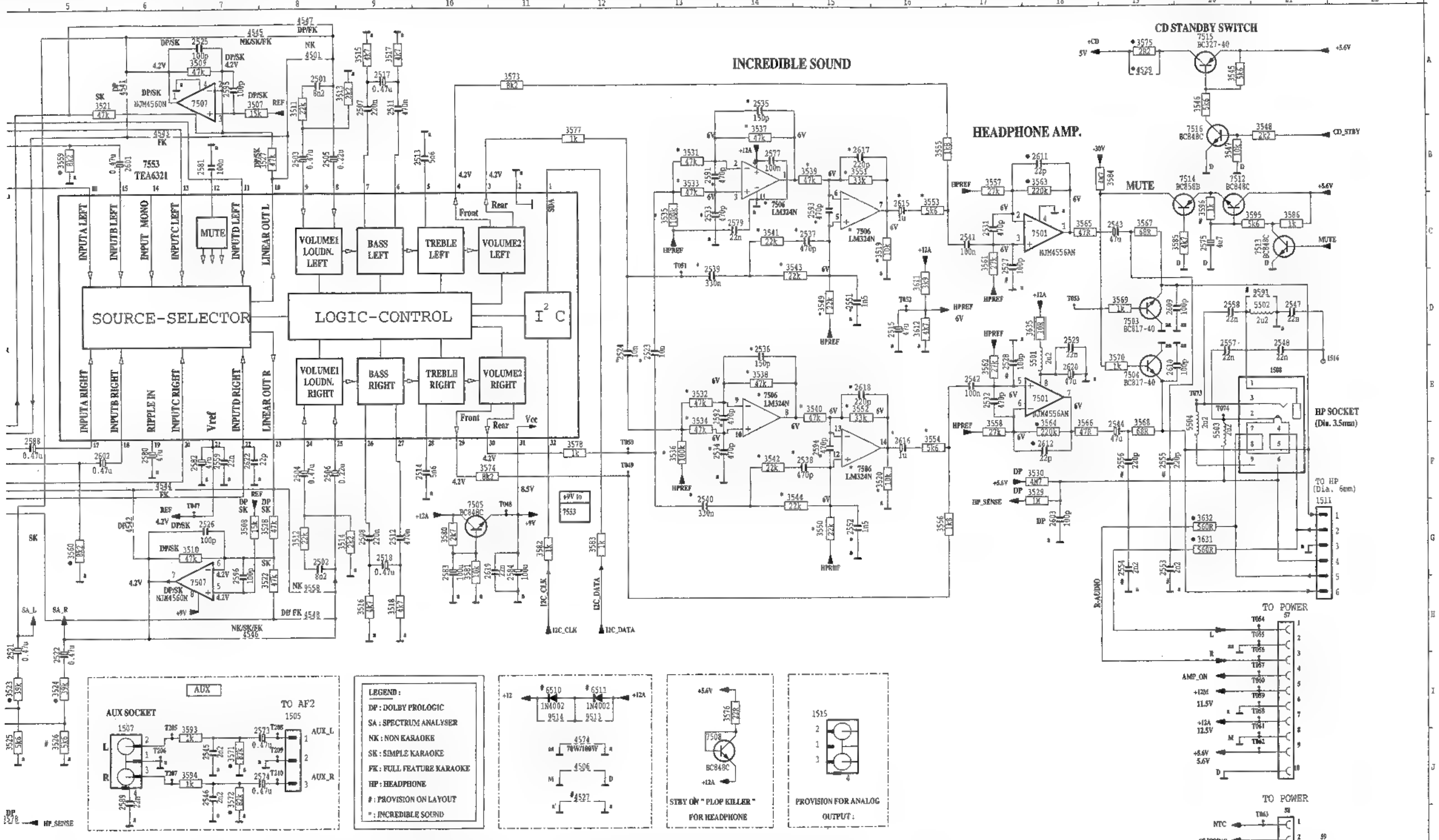
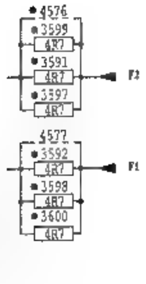
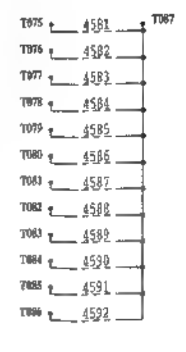
2558 D20	2582 F 7	2593 C15	2611 B18	2620 E18	3507 A 7	3516 H 9	3525 J 4	3534 E13	3543 C14	3552 E15	3561 C17	3570 E19	3580 G10	3589 H 4	3599 L 4	4501 A 8	4545 A 7	4583 L17	4592 M17	5504 E20	6501 H 3	7506 C15	7515 A20	



				Item Marked "*" ●							LEGEND : ( ) NOT USED ( ) USED SHOWN IN SCHEMATICS									
Item No.	Model/Version	12NC (3139 118 xxxxx)	Remarks	2507 2508	2611 2612	3563 3564	2613 2614	4576 4577	3591, 3592 3597, 3598 3599, 3600	4529	3575	3523 3524	3589 2585 6501	3501 3502	3503 3504	3505 3506	3559 3560	3631 3632	3601 3602	3571 3572
4581	FW322C/37	85150	4W, NON-IS, NK,MTF	68n	47p	120k	-	OR	-	-	2R2	39k	-	12k	22k	12k	15k	3k9	120k	68k
4582	FW332/21	88850	12W, IS, SK, MTF	100n	10p	330k	-	OR	-	-	2R2	39k	-	12k	22k	12k	15k	3k9	120k	68k
4583	FW332/22	88860	12W, IS, NK, MTF	100n	10p	330k	-	OR	-	-	2R2	39k	-	12k	22k	12k	15k	100R	120k	68k
4584	FW351C/37	85160	12W, IS, NK, MTF	100n	10p	330k	-	OR	-	-	2R2	39k	-	12k	22k	12k	15k	100R	120k	68k
4585	FW352C/21	88900	12W, IS, SK, MTF	100n	10p	330k	-	OR	-	-	2R2	39k	-	12k	22k	12k	15k	100R	120k	68k
4586	FW362/21	88930	12W, IS, FK, ETF-2	-	10p	330k	-	OR	-	-	2R2	56k	✓	10R	5k6	18k	8k2	100R	120k	68k
	FW372C/21		18W, IS, FK, ETF-2																	
4587	FW362/22	88920	12W, IS, NK, ETF-2	-	10p	330k	-	OR	-	-	2R1	56k	✓	10R	5k6	18k	8k2	100R	120k	68k
	FW372C/22		18W, IS, NK, ETF-2																	
4588	FW391C/37	89330	100W, NON-IS, NK, MTF	220n	47p	120k	-	OR	-	-	2R2	47k	-	2k7	5k6	2k7	4k7	560R	82k	82k
4589	FW392C/21	85210	100W, IS, SK, MTF	220n	22p	220k	-	OR	-	-	2R2	47k	-	2k7	5k6	2k7	4k7	560R	82k	82k
4590	FW392C/37	85200	100W, IS, NK, MTF	220n	22p	220k	-	OR	-	-	2R2	47k	-	2k7	5k6	2k7	4k7	560R	82k	82k
4591	MC150 ALL VERSION	88810	12W, IS, NK, ETF-2	100n	22p	220k	10uF,50V	-	4R7	OR	-	100k	✓	2k7	6k8	3k3	8k2	47R	82k	82k
4592	MC170 ALL VERSION	85080	70W, IS, NK, ETF-2	200n	22p	220k	10uF,50V	-	4R7	OR	-	100k	✓	2k7	5k6	3k3	8k2	560R	82k	82k





10-13

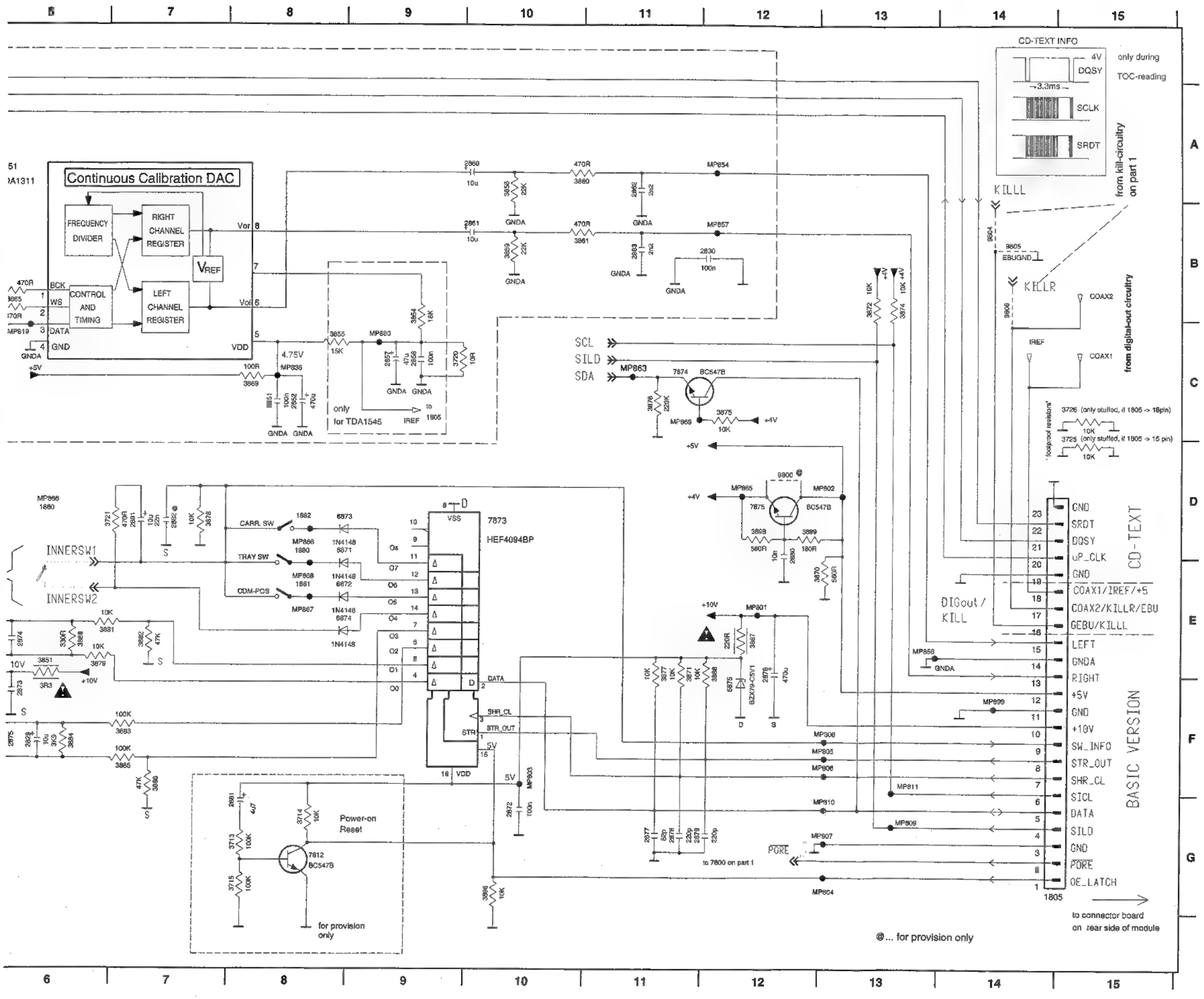
Circuit Diagram Main Board part2

CD-Text circuitry

digital out circuitry

ITEM	OPT_OUT	COAX_OUT
5802	NO	YES
5801	YES	NO
9803	YES	NO
3809	YES	YES
3717	YES	NO
3716	NO	YES
3712	NO	YES
2865	NO	YES
2864	YES	YES
2854	NO	YES

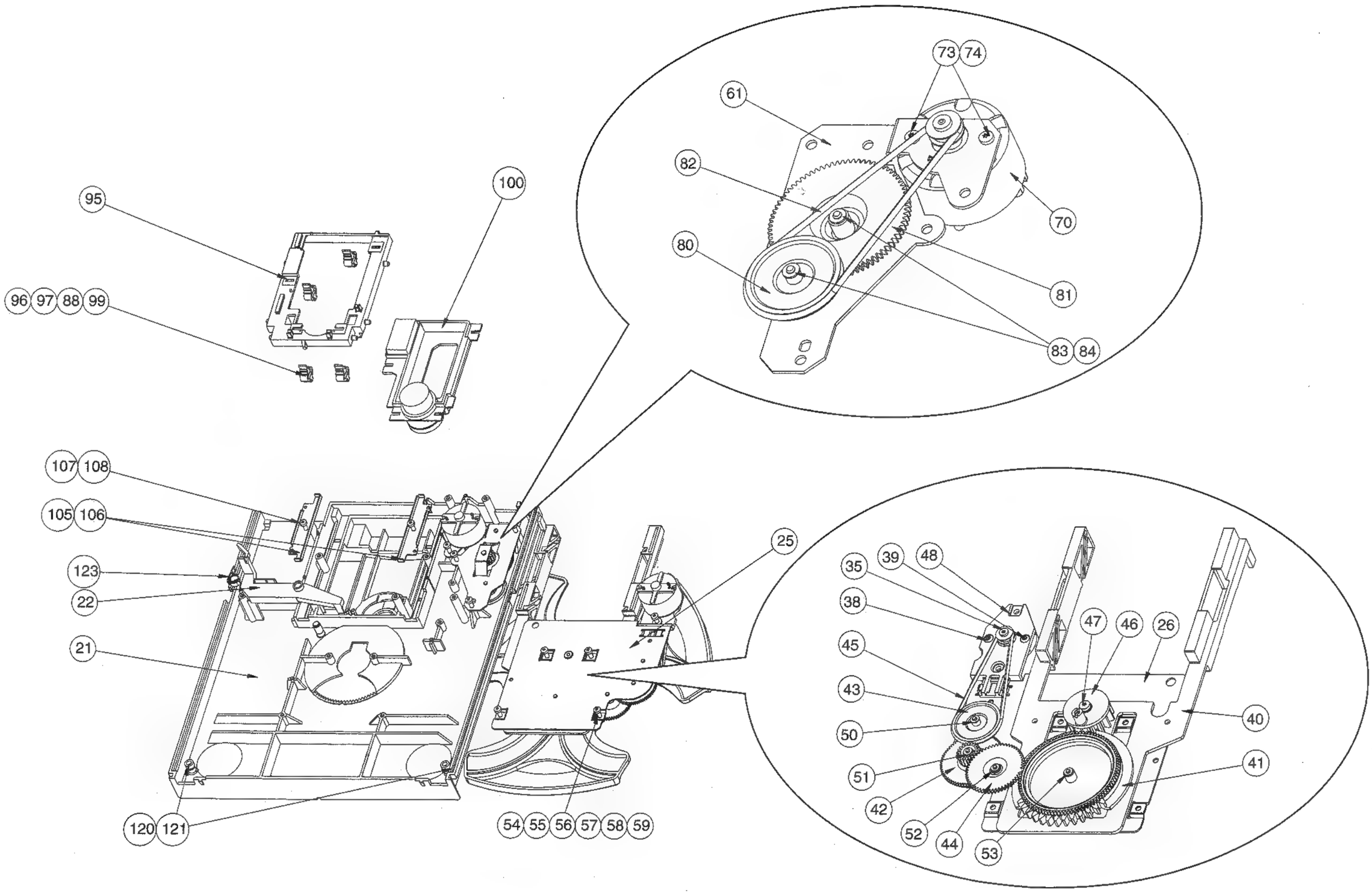
10-13

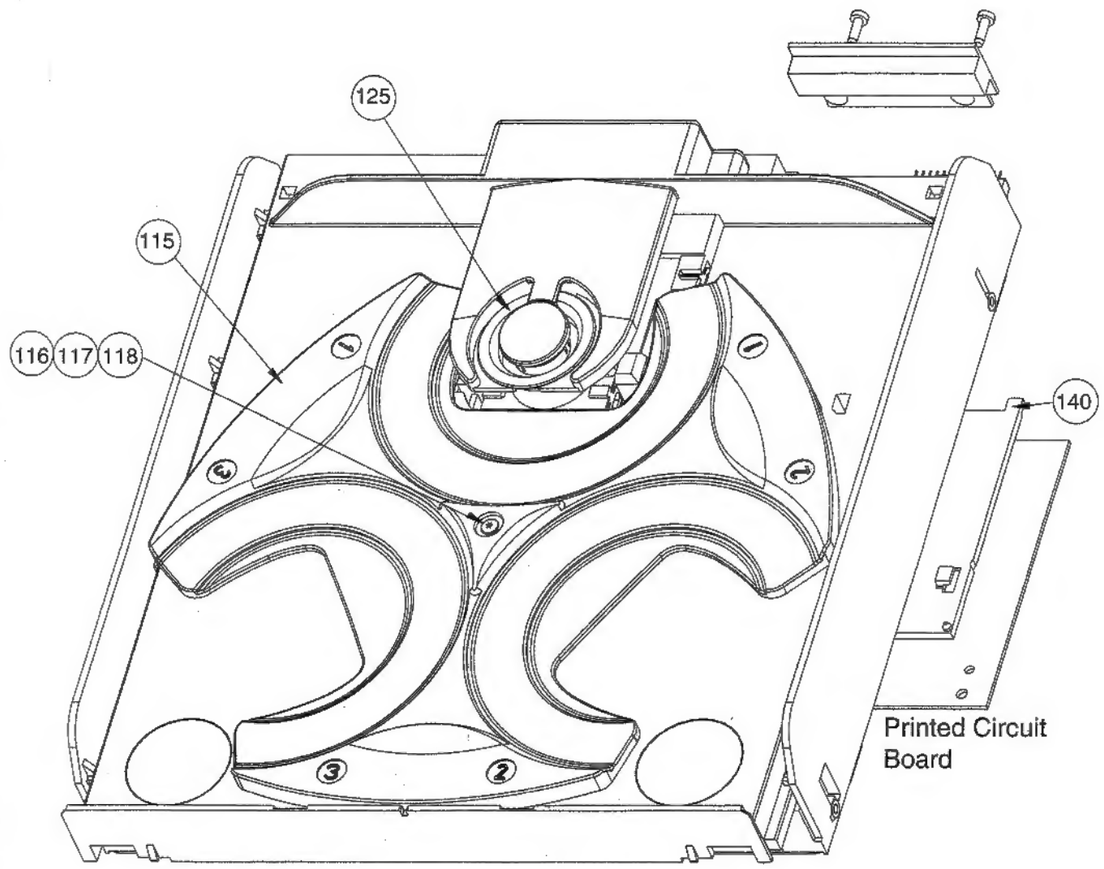


1805 G14	3876 C11	MP871 E6
1876 E3	3877 E11	MP880 C9
1878 F3	3878 D7	MP881 A2
1880 D8	3879 E6	MP882 A2
1881 E8	3880 E6	MP883 B2
1882 D8	3881 E6	MP884 B2
2829 F6	3882 E7	MP885 B2
2830 B12	3883 F7	MP886 A4
2851 C8	3884 F6	MP887 B4
2852 C8	3885 F7	MP888 B4
2853 B2	3886 F7	MP889 B4
2854 C2	3887 E12	MP890 C2
2857 C9	3888 E12	MP891 D4
2858 C9	3896 G10	MP892 D4
2860 A10	3898 D12	MP899 F14
2861 B10	3899 D12	
2862 A11	5801 C4	
2863 B11	5802 C3	
2864 D2	6871 D8	
2865 D3	6872 E8	
2870 E4	6873 D8	
2871 F4	6874 E8	
2872 G10	6875 F12	
2873 F6	7812 G8	
2874 E6	7851 A6	
2875 F6	7871 E5	
2876 E12	7873 D10	
2877 G11	7874 C11	
2878 G11	7875 D12	
2879 G11	7876 A2	
2880 D12	9800 D12	
2881 G8	9803 C3	
2882 D7	9804 B14	
3700 B2	9805 B14	
3701 B2	9806 B14	
3702 B2	9808 A10	
3703 A2	9809 A10	
3704 A2	9810 B10	
3705 A2	9811 B10	
3706 A4	9812 A2	
3707 B4	MP801 E12	
3708 B4	MP802 D13	
3711 A4	MP803 F10	
3712 C3	MP804 G13	
3713 G8	MP805 F13	
3714 G8	MP806 F13	
3715 G8	MP807 G13	
3716 D2	MP808 F13	
3717 C2	MP809 G13	
3720 C9	MP810 G13	
3725 D15	MP811 F13	
3726 C15	MP819 C6	
3809 C2	MP822 E4	
3832 B6	MP823 E4	
3851 E6	MP824 F4	
3854 B9	MP825 F4	
3855 C8	MP833 C5	
3858 A10	MP834 B5	
3859 B10	MP835 B5	
3860 A10	MP836 C8	
3861 B10	MP854 A12	
3865 B6	MP856 E13	
3866 C6	MP857 B12	
3869 C8	MP863 C11	
3870 E12	MP865 D12	
3871 E11	MP866 D8	
3872 B13	MP867 E8	
3874 B13	MP868 E8	
3875 C12	MP869 C11	

10-14

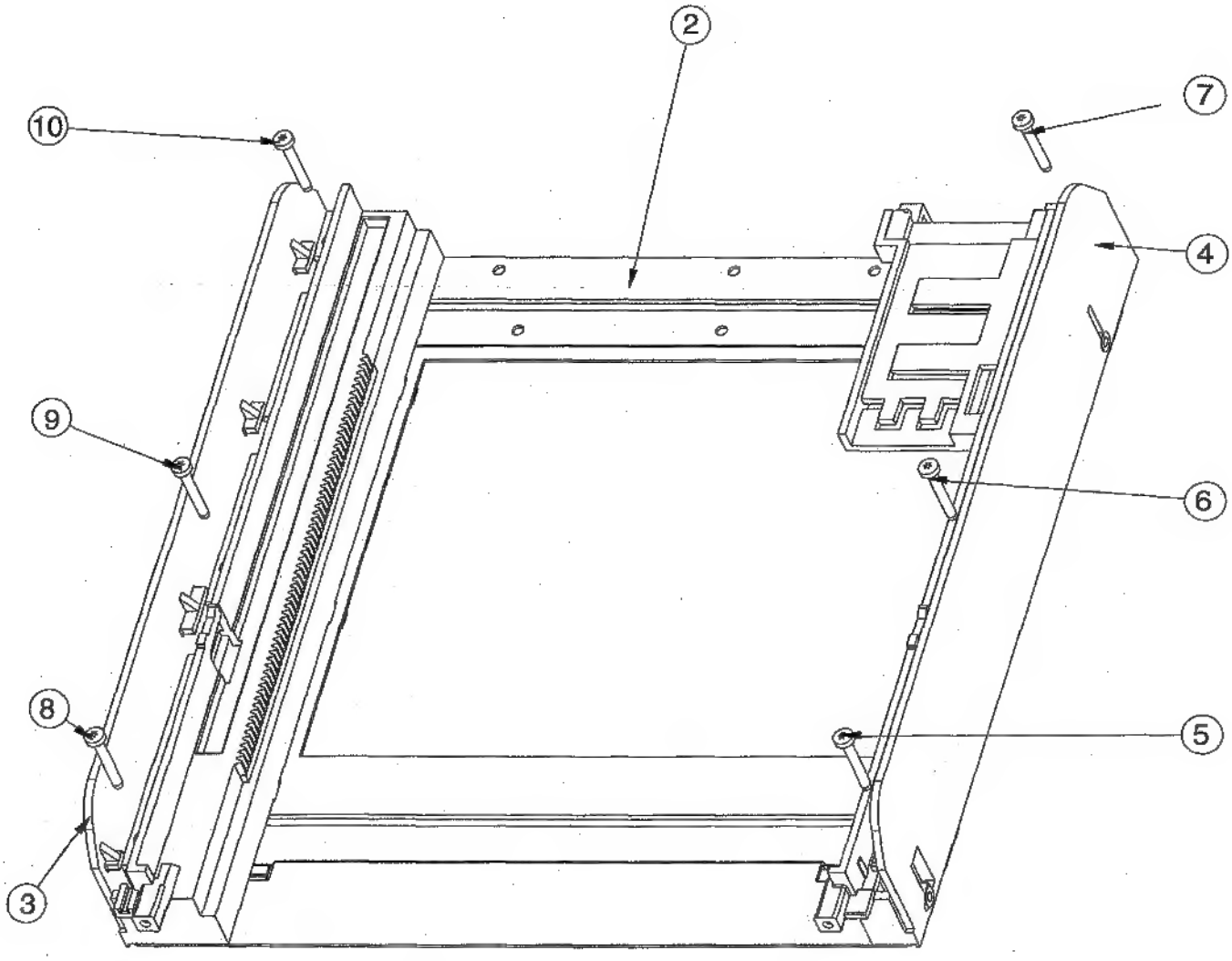
EXPLODED VIEW (3CDC MODULE)





MECHANICAL PARTSLIST 3CDC MODULE

	4822 390 10136	POLYLUB GLY801 (GREASE)	43	4822 528 10937	PULLEY
3	4822 463 11008	GUIDE LEFT	44	4822 522 10493	IDLER WHEEL
4	4822 463 11009	GUIDE RIGHT	45	4822 358 10115	BELT
21	4822 441 11615	DRAWER	46	4822 466 10735	ECCENTRIC GEAR WHEEL
22	4822 402 10088	BRACKET TUMBLER	50	4822 532 12364	WASHER
38	4822 502 12548	SCREW M2,6X3,5	51	4822 532 12364	WASHER
39	4822 502 12548	SCREW M2,6X3,5	52	4822 532 12364	WASHER
40	4822 463 11011	SLIDE	53	4822 532 12364	WASHER
41	4822 522 10509	CONTROL DISC	35	4822 361 10753	CARROUSEL MOTOR
42	4822 522 10492	GEAR WHEEL	70	4822 361 10753	CARROUSEL MOTOR



MECHANICAL PARTSLIST 3CDC MODULE

73	4822 502 12548	SCREW M2,6X3,5
74	4822 502 12548	SCREW M2,6X3,5
80	4822 528 10937	PULLEY
81	4822 522 10494	GEAR DRAWER
82	4822 358 10115	BELT
83	4822 532 12364	WASHER
84	4822 532 12364	WASHER
95	4822 404 10894	SUPPORT
96	4822 325 50215	SUSPENSION
97	4822 325 50215	SUSPENSION
98	4822 325 50215	SUSPENSION
99	4822 325 50215	SUSPENSION
100	4822 691 10615	CD DRIVE VAM1201
115	4822 466 10736	CARROUSEL
117	4822 532 12365	BUSH DRAWER
120	4822 532 51756	GROMMET
121	4822 532 51756	GROMMET
123	4822 402 10085	SWITCH BRACKET
125	4822 401 11708	DISC CLAMP
140	4822 466 10734	PLATE

ELECTRICAL PARTSLIST 3CDC MODULE

MISCELLANEOUS

100	4822 691 10615	CD DRIVE VAM1201
1800	4822 267 51453	FLEX FOIL CONNECTOR 12P
1805	4822 265 10979	FLEX FOIL CONNECTOR 15P
1806	4822 265 10981	FLEX FOIL CONNECTOR 15P
1880	4822 276 13503	SWITCH
1881	4822 276 13503	SWITCH
1882	4822 276 13503	SWITCH

CAPACITORS

2800	4822 126 10053	180pF	10%	50V
2801	4822 122 10466	220pF	10%	50V
2802	4822 126 10053	180pF	10%	50V
2803	4822 122 10466	220pF	10%	50V
2804	4822 126 12787	330pF	10%	50V
2805	4822 122 10466	220pF	10%	50V
2806	4822 122 10466	220pF	10%	50V
2807	4822 126 12878	1,5nF	10%	16V
2808	4822 122 10466	220pF	10%	50V
2809	4822 126 12882	100nF	20%	50V
2810	4822 122 10459	560pF	10%	50V
2811	4822 122 10466	220pF	10%	50V
2812	4822 122 10319	82pF	5%	50V
2813	4822 122 10319	82pF	5%	50V
2814	4822 122 33849	150pF	10%	50V
2815	4822 122 33192	27pF	5%	50V
2817	4822 122 33849	150pF	10%	50V
2819	4822 122 33848	47pF	5%	50V
2820	4822 122 33848	47pF	5%	50V
2821	4822 122 10462	15pF	5%	50V
2822	4822 126 12339	2,2nF	10%	16V
2823	4822 122 33848	47pF	5%	50V
2824	4822 126 11585	22nF	20%	50V
2825	4822 126 12882	100nF	20%	50V
2826	4822 124 23624	470µF	20%	16V
2827	4822 126 12882	100nF	20%	50V
2828	4822 126 12882	100nF	20%	50V
2829	4822 124 41579	10µF	20%	50V
2830	4822 126 12882	100nF	20%	50V
2831	4822 124 41972	4,7µF	20%	50V
2832	4822 124 12032	4,7µF	20%	50V
2835	4822 126 12882	100nF	20%	50V
2837	4822 126 12882	100nF	20%	50V
2838	4822 126 12882	100nF	20%	50V
2839	4822 126 12882	100nF	20%	50V
2840	4822 126 12882	100nF	20%	50V
2841	4822 122 10574	1,2nF	10%	16V
2842	4822 121 51387	10nF	20%	16V
2843	4822 126 12882	100nF	20%	50V
2844	4822 122 10574	1,2nF	10%	16V
2845	4822 121 51387	10nF	20%	16V
2846	4822 126 11585	22nF	20%	50V
2847	4822 126 12882	100nF	20%	50V
2849	4822 126 11585	22nF	20%	50V
2850	4822 122 33197	1nF	10%	50V
2851	4822 126 12882	100nF	20%	50V
2852	4822 124 80857	470µF	20%	16V
2856	4822 122 33848	47pF	5%	50V
2859	4822 126 12882	100nF	20%	50V
2860	4822 124 41579	10µF	20%	50V
2861	4822 124 41579	10µF	20%	50V
2862	4822 126 12339	2,2nF	10%	16V
2863	4822 126 12339	2,2nF	10%	16V
2866	4822 126 12882	100nF	20%	50V
2867	4822 122 33848	47pF	5%	50V

CAPACITORS

2868	4822 126 12882	100nF	20%	50V
2869	4822 126 12882	100nF	20%	50V
2870	4822 126 12882	100nF	20%	50V
2871	4822 126 11585	22nF	20%	50V
2872	4822 126 12882	100nF	20%	50V
2873	4822 126 12882	100nF	20%	50V
2874	4822 126 11585	22nF	20%	50V
2875	4822 126 11585	22nF	20%	50V
2876	4822 124 80857	470µF	20%	16V
2877	4822 122 10319	82pF	5%	50V
2878	4822 122 10466	220pF	10%	50V
2879	4822 122 10466	220pF	10%	50V
2880	4822 121 51387	10nF	20%	16V
2884	4822 126 12882	100nF	20%	50V
2887	4822 126 12882	100nF	20%	50V
2891	4822 124 23179	10µF	20%	16V

RESISTORS

3703	4822 116 83883	470Ω	5%	0,16W
3720	4822 116 52176	10Ω	5%	0,5W
3721	4822 116 83883	470Ω	5%	0,5W
3725	4822 116 83864	10kΩ	5%	0,5W
3726	4822 116 83864	10kΩ	5%	0,5W
3800	4822 116 52239	120kΩ	5%	0,5W
3801	4822 116 83864	10kΩ	5%	0,5W
3802	4822 116 52239	120kΩ	5%	0,5W
3803	4822 116 83864	10kΩ	5%	0,5W
3804	4822 116 52291	56kΩ	5%	0,5W
3805	4822 116 83864	10kΩ	5%	0,5W
3806	4822 116 83864	10kΩ	5%	0,5W
3807	4822 116 83864	10kΩ	5%	0,5W
3808	4822 116 83864	10kΩ	5%	0,5W
3810	4822 050 11002	1kΩ	5%	0,2W
3812	4822 116 83884	47kΩ	5%	0,16W
3813	4822 116 83864	10kΩ	5%	0,5W
3816	4822 116 52269	3,3kΩ	5%	0,5W
3817	4822 116 83961	6,8kΩ	5%	0,16W
3818	4822 116 83864	10kΩ	5%	0,5W
3819	4822 116 83883	470Ω	5%	0,16W
3820	4822 116 52269	3,3kΩ	5%	0,5W
3821	4822 116 52269	3,3kΩ	5%	0,5W
3822	4822 116 52257	22kΩ	5%	0,5W
3823	4822 116 52269	3,3kΩ	5%	0,5W
3824	4822 116 52269	3,3kΩ	5%	0,5W
3825	4822 050 11002	1kΩ	5%	0,2W
3826	4822 116 52257	22kΩ	5%	0,5W
3827	4822 116 52278	390kΩ	5%	0,5W
3828	4822 116 52257	22kΩ	5%	0,5W
3830	4822 116 52235	1MΩ	5%	0,5W
3831	4822 116 52257	22kΩ	5%	0,5W
3832	4822 116 83883	470Ω	5%	0,16W
3833	4822 116 83864	10kΩ	5%	0,5W
3834	4822 116 52283	4,7kΩ	5%	0,5W
3837	4822 050 11002	1kΩ	5%	0,2W
3838	4822 050 11002	1kΩ	5%	0,2W
3839	4822 116 52245	150kΩ	5%	0,16W
3840	4822 116 52245	150kΩ	5%	0,16W
3841	4822 116 83961	6,8kΩ	5%	0,16W
3842	4822 116 83864	10kΩ	5%	0,5W
3843	4822 116 52303	8,2kΩ	5%	0,5W
3844	4822 116 83883	470Ω	5%	0,16W
3845	4822 116 83864	10kΩ	5%	0,5W
3846	4822 116 52303	8,2kΩ	5%	0,5W

ELECTRICAL PARTSLIST 3CDC MODULE

RESISTORS

3847	4822 116 83883	470Ω	5%	0,16W
3848	4822 116 52303	8,2kΩ	5%	0,5W
3849	4822 116 52303	8,2kΩ	5%	0,5W
3850	4822 116 83883	470Ω	5%	0,16W
3851	4822 052 10338	3,3Ω		NFR25
3852	4822 052 10338	3,3Ω		NFR25
3853	4822 052 10338	3,3Ω		NFR25
3856	4822 116 80176	1Ω	5%	0,5W
3857	4822 050 11002	1kΩ	5%	0,2W
3858	4822 116 52257	22kΩ	5%	0,5W
3859	4822 116 52257	22kΩ	5%	0,5W
3860	4822 116 83883	470Ω	5%	0,16W
3861	4822 116 83883	470Ω	5%	0,16W
3862	4822 116 52175	100Ω	5%	0,5W
3863	4822 116 52175	100Ω	5%	0,5W
3864	4822 116 52175	100Ω	5%	0,5W
3865	4822 116 83883	470Ω	5%	0,16W
3866	4822 116 83883	470Ω	5%	0,16W
3867	4822 116 52234	100kΩ	5%	0,5W
3869	4822 116 52175	100Ω	5%	0,5W
3870	4822 116 52226	560Ω	5%	0,5W
3871	4822 116 83864	10kΩ	5%	0,5W
3872	4822 116 83864	10kΩ	5%	0,5W
3873	4822 116 83883	470Ω	5%	0,16W
3874	4822 116 83864	10kΩ	5%	0,5W
3875	4822 116 83864	10kΩ	5%	0,5W
3876	4822 116 83874	220kΩ	5%	0,5W
3877	4822 116 83864	10kΩ	5%	0,5W
3878	4822 116 83864	10kΩ	5%	0,5W
3879	4822 116 83864	10kΩ	5%	0,5W
3880	4822 116 52219	330Ω	5%	0,5W
3881	4822 116 83864	10kΩ	5%	0,5W
3882	4822 116 83884	47kΩ	5%	0,16W
3883	4822 116 52234	100kΩ	5%	0,5W
3884	4822 116 52276	3,9kΩ	5%	0,5W
3885	4822 116 52234	100kΩ	5%	0,5W
3886	4822 116 83884	47kΩ	5%	0,16W
3887	4822 052 10221	220Ω	5%	
3888	4822 116 83864	10kΩ	5%	0,5W
3889	4822 116 83883	470Ω	5%	0,16W
3890	4822 116 83883	470Ω	5%	0,16W
3891	4822 116 52272	330kΩ	5%	0,5W
3893	4822 116 52257	22kΩ	5%	0,5W
3894	4822 116 52191	33Ω	5%	0,5W
3895	4822 116 52176	10Ω	5%	0,5W
3896	4822 116 83864	10kΩ	5%	0,5W
3897	4822 116 52226	560Ω	5%	0,5W
3898	4822 116 52226	560Ω	5%	0,5W
3899	4822 116 52213	180Ω	5%	0,5W

COILS

1810	4822 242 73557	CERAMIC RES. 8,46MHz

DIODES

6871	4822 130 30621	1N4148
6872	4822 130 30621	1N4148
6873	4822 130 30621	1N4148
6874	4822 130 30621	1N4148
6875	4822 130 34233	BZX79-B5V1

TRANSISTORS

7808	4822 130 41344	BC337-40
7874	4822 130 40959	BC547B
7875	4822 130 40959	BC547B

INTEGRATED CIRCUITS

7800©	4822 209 12752	SAA7378GP
7801©	5322 209 11517	PC74HCU04T
7806	4822 209 32852	TDA7073A/N2
7807	4822 209 32852	TDA7073A/N2
7851	4822 209 32421	TDA1311A/N2
7871	4822 209 32852	TDA7073A/N2
7873	5322 209 10421	HEF4094BP